NEW TIMBRAL DIRECTIONS IN THE CONTEMPORARY CELLO REPERTOIRE

Analysis of works by Colombian composers from 2000 to 2015

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TABLE OF CONTENTS

ABSTRACT

This work analyses the repertoire for solo cello and cello with electronic media from 2000 to 2015 by Colombian composers, focusing on timbre as the main musical element explored. Nevertheless, a historical view on the European and non-European repertoire is included. This thesis consists of two parts. The first part includes chapters 1, 2, and 3. Chapter 1 classifies the cello playing techniques used in the most well-known pieces and studies the solo cello from the 17th century onwards, emphasising so-called extended playing techniques. Such classification serves as a tool for the further musical analyses in this work and as a foundation for the methodological framework in chapter 2, which discusses the notions of timbral modulation, timbral polyphony, and timbral re-signification. Chapter 3 discusses a new timbral development in the solo cello and cello with electronic media repertoire in the 20th and 21st century. This chapter surveys the crucial historical facts that generated a paradigm shift in the cello repertoire. This includes the emergence of different musical tendencies and the work of pioneer composers and performers. The second part of this study includes chapters 4 and 5, where the solo cello and cello with electronics repertoire from 2000 to 2015 by Colombian composers is analysed. The pieces involved emphasise a new timbral development within the repertoire. To summarise, this thesis emphasises how timbre was one of the elements that bifurcated the cello repertoire in the 20th and 21st century. Furthermore, this study describes how progressive composers and performers have deeply expanded playing techniques and the timbre of the instrument, and the exploration and combination of the medium with apparatus, artefacts, and new instruments into new ways of making music.

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Sergio Andrés Castrillón Arcila
Helsinki, Finland
2019

This work is dedicated to

my parents Celmira and Francisco Javier,
my sister Natalia, my brother Sebastián
and my grandfather Alfredo.

Thanks for giving me the primal inspiration and the strength of life.

INTRODUCTION

By the beginning of the 20th century the first seeds of timbral explorations and the use of extended techniques began to spread throughout the solo cello repertoire. Pieces such as Zoltán Kodály's (1915) and Paul Hindemith's (1922) sonatas for solo cello presented different timbral and technical perspectives regarding timbral modulations and timbral re-signification. During the second half of the 20th century, several pieces for solo cello already showed radical changes in the treatment of sound and techniques, which was also connected to the emergence of electronic devices and their application to acoustic instruments. Some clear examples are *Synchronisms 3* (1965) for cello and tape by Mario Davidovsky, *A-7* (1966) for cello and tape by Hilda Dianda, and *Pression* (1969) for solo cello by Helmut Lachenmann, among others.

By the 21st century, the repertoire for solo cello and cello with electronic media expanded worldwide. This repertoire displays a common ground in terms of radical timbral treatments and extended playing techniques, which established a balanced compositional and performance level among musicians. In fact, in Latin America, where such repertoire was less developed than in Europe during the previous century, the amount of such pieces has increased considerably. Furthermore, the skills of the performers have continually improved, allowing cellists and composers to explore different possibilities. In Mexico, for example, several works for cello and electronic media have recently appeared via the efforts of cellist Iracema de Andrade, who has commissioned and collaborated with both composers and audiovisual artists. A similar situation has occurred in Argentina with the cellist Martín Devoto, who has premiered and commissioned dozens of pieces for solo cello and cello with electronics by Latin American composers. In Chile, the cellist Celso López has collaborated with composers and recorded a series of works for cello and electronics. The case of Colombia, which is the central topic of this study, is particular.

Despite of the lack of local performers interested in generating new repertoire, the internationalisation of Colombian composers has generated several multidisciplinary works that have resulted from collaboration with acclaimed contemporary international performers, such as Severine Ballon, Emilié Girard-Charest, and Jeanne Maisonhaute, among others. This repertoire shows a broad, eclectic, and multicultural development compared to the previous century and displays a progressive treatment of timbre and playing techniques, as well as the inclusion of multimedia. This demonstrates how the growth of repertoire composed during the 21st century in Colombia is linked strongly with ongoing globalisation and how Colombian composers approach the creative process in different ways.

Nevertheless, this repertoire has not been researched before and is in fact almost unknown among musicians and researchers in Colombia and internationally. The main objective of this dissertation is to analyse the repertoire for solo cello and cello with electronic media from 2000 to 2015 by Colombian composers. The analyses principally examine the inclusion of radical playing techniques, in which timbre is emphasised and explored widely, showing the coexistence between a traditional sound of the cello and a radical new paradigm that developed from the 20th century

onwards. This study also shows how by the second half of the 20th century, the emergence of new musical trends and the development of the so-called extended techniques generated a growth in the worldwide solo cello repertoire and the birth of several works for cello with electronic media. This established different approaches to both composition and interpretation and has consolidated what is currently a contemporary cello tradition. Colombian composers and cello performers of the 21st century are well aware of these phenomena and are continually developing their repertoire. However, its dissemination has not been very effective and many of these works are not published in any platform and have not even been recorded. Thus, this dissertation intends to reveal a current, broad, and eclectic Colombian solo cello and cello with electronic media repertoire, which will establish a starting point within Colombian cello research and open up this spectrum to composers, professional cellists, and cello students interested in Colombian contemporary music.

This leads to a series of questions. How does the recent solo cello and cello with electronics repertoire explore new directions regarding timbre and playing techniques? What are the causes and/or consequences of such new directions? What associated precedents and references can be identified? What kind of chronological and social characteristics are related to this? To address these questions, this dissertation first intends to follow a chronological line regarding timbral phenomena and the extension of cello playing techniques applied to the international repertoire. Second, this thesis introduces a means of analysing timbral phenomena from a compositional and performance perspective. By merging both the former and the later perspectives, this study intends to demonstrate how timbre was one of the elements that bifurcated the cello repertoire by the emergence of several new musical trends and the development of extended playing techniques. Both of these facets interact simultaneously and have established a symbiotic relationship. This, in turn, has resulted in a long and well established contemporary cello tradition that is not sufficiently promoted within educational programs both among professional cellists and cello students. In fact, the broad repertoire of solo cello and cello with electronics works composed during the 20th and 21st century is a sort of *taboo,* which can not continue to be hidden but should be revealed. Therefore, this dissertation also intends to be illuminate the 20th century's cello timbre development through its repertoire.

The musical analyses in this thesis focus primarily on different timbral phenomena, such as timbral modulation, timbral polyphony, and timbral re-signification. Those linked to a categorisation of cello playing techniques serve as the main tools for the analyses. Timbre as a complex sound element became further explored and more important in the solo cello literature during the first half of the 20th century, primarily within Europe. However, the development of timbre within the repertoire for solo cello and cello with electronics expanded rapidly throughout the world. Significant sonic innovations are present within the most well known cello pieces of the 20th and 21st century, including those by Zoltán Kodály, Gaspar Cassado, Luigi Dallapiccola, Kaija Saariaho, Helmut Lachenmann, Iannis Xenakis, John Cage, Giacinto Scelsi, Kristian Ireland, Jonathan Harvey, Julio Estrada, Alejandro Iglesias Rossi, Marcos Franciosi, and Marcos Suárez, among others. Timbral explorations and developments in such repertoire are attributed mainly to

the emergence of several new musical trends and to the expansion of playing techniques, which at the same time expanded the traditional sonic conception of the cello and established a different view on the medium's sound and its functionality. Furthermore, this analysis intends to contextualise other matters present in a selected repertoire, which started to generate a sort of common ground within compositional and performance procedures and were influenced strongly by the inclusion of extra-musical elements, the use of multimedia, and by multidiscilinary collaborations.

To contextualise timbral modulation, this dissertation uses as a model a strategy for musical analysis by Carlos Mastropietro, which can be applied to any kind of sound source, group, or ensemble. Mastropietro (2007: 2) defines timbral modulation as the process where the timbral features of a sonic phenomenon vary according to transformations inputed to the sonic source. Timbral polyphony is a notion approached in this thesis to analyse timbral developments occurring vertically. This tool is coined here as a proposal of timbral analysis from both a compositional and performance perspective on pieces or passages that show a simultaneous variety in their sonic qualities. For this notion the model by Mastropietro is also used and adapted, as well as the axis sound/noise used by Saariaho (1987: 93). Timbral re-signification is approached mainly from the perspective of changing the functionality of the cello within the solo and solo with electronics repertoire and how this generates a shift in the paradigm of cello sound through instrumental deconstruction and re-instrumentation phenomena. The latter idea indicates how extended playing techniques give different significations to the cello and its sound, establishing a different hierarchical relation between sound source and action. The former refers to the interpolation of different instruments' techniques or performance tendencies into the cello. Instrumental deconstruction is applied as an inverted process to the concept *instrumentalizing,* as introduced by Andy Keep (2009: 113–129). This concept explains the performability and possibilities of sonic manipulation in sound objects within experimental music, mainly through improvisation (Keep 2009: 113). The notion of re-instrumentation in this dissertation is mainly used to analyse the repertoire for cello and electronic media, particularly when the sound of the instrument is re-signified by live electronic processes.

All these notions are preceded in this thesis by a general survey on timbre by different authors and composers, including Erik Christensen (1996: 12), Anthony Gritten (2018: 3,6), and Denis Smalley (1994: 37). However, a view on timbre from more of a performance perspective, as discussed by Patricia Holmes (2011: 301), constitutes a means of analyzing timbre via playing techniques as opposed to standard spectral morphology. To enhance this proposal, a categorisation of the most well known playing techniques in the cello repertoire will be used as a methodological tool.

This dissertation includes multiple methods of analysis. The research material is based on music scores, recordings, and live performances. Namely, this involves both compositional and

performance perspectives.[1] The research also includes qualitative methods, including interviews with cellists and composers involved in the repertoire for solo cello and cello with electronics during the 20th and 21st century, data collection from music archives, and visits to music laboratories in Europe and South America. However, most of the material of the Colombian repertoire from 2000 to 2015 was provided by the composers and performers themselves, which presented challenges during the investigation. Therefore, this work intends to be the first reference that builds a proper archive of the repertoire to facilitate future studies.

Part of the international repertoire for solo cello and cello with electronics of the 20th and 21st century has been catalogued and analysed in publications by Dimitry Markevitch (1989) *The solo cello: A biography of the Unaccompanied Violoncello Literature;* Robin Stowell (2000) "*Solo cello repertoire": The Cambridge companion to the cello*; German Marcano (2004) *Música latinoamericana para violonchelo: Catálogo de obras*; Tanja Orning (2012) *Pression-a performance study*; and Donald Homuth (2014) CELLO MUSIC SINCE 1960: *A Bibliography of Solo, Chamber and Orchestral Works for the solo cellist,* among others. However, approaches to timbral and technical-performance matters on the new Colombian repertoire have not been studied in detail. When this dissertation was initiated, very few studies on extended playing techniques on the cello and its relationship with timbre were published. Therefore, since this topic is strongly connected to these matters, it was necessary to design for the analyses of the repertoire a categorisation of the playing techniques based on a personal analysis of the most well known studies and pieces for solo cello from the 17th to the 21st century (see sources). Nevertheless, in the recent past significant publications, mainly in artistic research, have focused on extended playing techniques on the cello. This is the case of *Foundations of Modern Cello Technique: Creating the Basis for a Pedagogical Method* (2016), written by Valerie Welbanks. On the other hand, *The Twenty-First Century Cellist's Bibliography: A Guide to Cello Research from 2000-2015* (2016) written by Karl A. Ronnevik is a compilation of texts, essays, and dissertations that include matters on general cello studies, cello repertoire, cello pedagogy, cello performers, and cello performance. A more detailed study on interpretation and foundation of certain extended playing techniques, such as multiphonics, variations in bow pressure, and the use of two bows, among others, has been written by Gesa Biffio (2011: 1–32) in the article "NEW EXTENSIONS OF THE BEAUTIFUL CELLO TONE", and by Ellen Fallowfield (2009:
62–104) in her study "Cello Map: A handbook of cello technique for performers and composers". Therefore, the categorisation of the techniques presented in chapter 2 is a tool that works specifically for the research material contained in this thesis; its approach is more analytical than pedagogical and artistic.

As mentioned above, the Colombian solo cello and cello with electronic media repertoire of the 21st century has not been previously researched. However, in recent years, as part of his doctoral

[1] Conversation with Javier Arias on the 3rd of May 2018 (Medellín, Colombia)

thesis, the Mexican cellist and researcher Javier Arias has catalogued the repertoire of works for solo cello and chamber format where the cello is soloist by Colombian composers during the 20th and 21st centuries. This work will be published between 2018 and 2019 and includes the analysis of four pieces from the 20th century based on performance perspectives. Therefore, the present work will be expanded in the future to interact with and respond to other recent and ongoing investigations in Colombia and abroad.

The first and second chapters of this dissertation address methodological and theoretical frameworks, which at the same time are used as the main tools in the musical analysis of the last three chapters. The first chapter presents a general view on timbre and explains how timbral modulation, timbral polyphony, and timbral re-signification are remarkable phenomena present in a paradigm shift of the solo cello and cello with electronic media repertoire. The second chapter, which is connected to the aforementioned notions, presents the extensions of cello playing techniques and its repercussions in the repertoire. The third chapter presents a solid foundation to better understand the emergence of several works for solo cello and cello with electronic media by Colombian composers in the 21st century. Moreover, chapter three follows a chronological line related to the extension of cello playing techniques in the most well known pieces of the solo cello and cello with electronics repertoire during the 20th and 21st centuries, which will facilitate categorising the pieces studied into different musical trends and compositional styles. In this chapter, the aforementioned repertoire is explored within *musique concrète* and electronic music, indeterminacy and experimentalism, improvised music, jazz, pop, and rock. This chapter will also present a geographical directionality that starts from Europe and the United States, leading to Latin America, and ending particularly in Colombia. This is due to the fact that the development of the solo cello and cello with electronic media repertoire in Colombia is rather recent and because this repertoire was strongly influenced by Europe and the United States, which are the regions that pioneered such developments. The last sections of this chapter (3.2.4. and 3.2.5.) are more focused on the work of the performers and their influence on the development of the cello within more popular music genres. Therefore, the analysis tools are based mainly on listening to the recordings and the discrimination of playing techniques used by the cellists. The fourth and fifth chapters of this thesis present analyses of 11 pieces for solo cello, and seven pieces for cello and electronic media from the 21st century by Colombian composers. Both chapters emphasise timbral subjects related mainly to the idea of timbral modulation, timbral polyphony, and timbral re-signification.

PART I

METHODOLOGY, ANALYTICAL TOOLS AND NEW TIMBRAL DEVELOPMENTS IN THE CELLO REPERTOIRE IN THE 20TH AND 21ST CENTURY

1. CATEGORISING CELLO PLAYING TECHNIQUES

This chapter presents the results of a *playing techniques analysis* applied to the most well known solo cello pieces and technique studies composed from the 1700s until presently.[2] The main sources used were research on the solo cello repertoire by Robin Stowel (2000: 137–145) and the catalogues of solo cello pieces by Dimitri Markevitch (1989: 19–79) and Donald Homuth (1994: 1–106). This analysis also encompassed some of the techniques used by well known performers working mostly in non-notated music. These performers include Tom Cora, Ernst Reijseger, Okyung Lee, Stefan Braun, and Alfred Zimmerlin, among others. The analysis follows a historical line and was based primarily on identifying the playing techniques, bow strokes, and articulations from the musical scores as well as from listening processes. The entire track of the analysis is not included in this dissertation. However, some of the results, such as a categorisation of cello playing techniques (see Table 1), is presented here. This table is used as a tool for a timbral analysis applied to chapter 3 and a plural analysis applied to the pieces studied in chapters 4 and 5, respectively. These chapters deal only with pieces for solo cello and cello with electronic media from the repertoire of the 20th and 21st century.

One of the results of the playing techniques analysis is that the repertoire from the 18th and 19th centuries was developed under a clear standardisation of playing techniques, establishing a cello technique tradition that is still used today (see Table 1). On the other hand, although it was difficult to estimate the number of playing techniques that appeared in the repertoire of the 20th and 21st centuries, there is a range of techniques that are used repeatedly by composers and cellists within the notated repertoire (see Table 1). This has somehow standardised most of the sonorities that confirm the existence of a contemporary cello technique tradition, based on so-called extended techniques. On the other hand, in genres such as free improvisation, free jazz, and rock, in which the development of new techniques occurred mainly through performance practice rather than in notation, there is a wider range of playing extended techniques that show, for instance, a greater complexity in terms of execution, timbre, and physical posture (see Table 1 and sections 3.2.4. and 3.2.5.). According to Welbanks (2016: 31)

> To distinguish between modern and traditional technique – not to create a separation, but rather, to delineate an area of focus – the progression involved in learning the cello needs to be considered in its entirety. The personal development of a cellist mirrors the historical evolution of technique throughout the centuries, a useful archetype when placing modern music and its performance in context.

Therefore, to better understand the following chapters, it is necessary to introduce the fundamental cello playing techniques used within the studied repertoire and their ramifications, the relationship with the emergence of other techniques, devices, new music trends, and different

[2] See sources and all musical examples in chapters 3, 4, and 5.

compositional styles. Some specific denominations are also established as they will be referred to subsequently in the cello techniques categorisation table.

According to the playing techniques analysis mentioned above, the cello has mainly been played according to two *fundamental techniques*, a sort of *double root: arco* and *pizzicato.* Both techniques have mainly been executed by the right hand to produce the sound over the strings, while the primary function of the left hand has been to press the strings to fix pitches when no open strings are played. Nevertheless, the development and the technical functions of both hands have taken new directions due the emergence of new pieces and new performers (see Table 1 and chapter 3).

The *arco* technique was more developed and used than *pizzicato* within the solo repertoire composed before the 20th century. This fact can be seen from the acoustic, stylistic, and functional perspectives. For instance, the range of resonance is wider when using *arco.* The use of *arco* also more easily permits a clear articulation of melodies, chords, dynamics, and velocities required in most of the solo cello music written before the 20th century. Therefore, between the 18th and 19th centuries, the most important *derived techniques*[3] (see Table 1.1) were developed within both solo pieces and technique studies.[4]

On the other hand, *pizzicato* is by nature more limited in terms of resonance, particularly in the highest register. With such technique, for instance, it is also more difficult to achieve clearly fast melodies. Although the *pizzicato* technique presents some advantages, such as execution of chords and arpeggios in different dynamics and with varied articulations, it appeared that the stylistic trends and aesthetics of the solo cello music composed before the 20th century did not require the sonic characteristics of this technique, as it is not featured commonly within the repertoire. Therefore, the *pizzicato* technique can be considered somehow as one of the first extended playing techniques in the cello.

While the right hand expanded in technical possibilities, the left hand experimented with changes not only in the position and the use of pressure but also in the level of harmonic complexity and in the exploration of the highest register that the solo pieces demanded. For example, the inclusion of double stops, arpeggios, and chords were increasingly explored within the repertoire and technique studies. This somehow expanded the functionality of the medium and categorised it beyond the melodic instruments family, turning it into a harmonic instrument, which at the same time began to generate more technical difficulties for the left hand.

During the 20th century, partly as consequence of the emergence of diverse musical trends, different compositional styles and new aesthetic principles (see chapter 3), the derived techniques

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[3] This denomination is used to refer to *pizzicato* articulations, *arco* stokes, and the techniques derived from the *double root: arco* and *pizzicato.*

[4] The contribution to the repertoire and technique studies of cellists-composers such as Luigi Boccherini, Jean-Louis Duport, Sebastian Lee, and David Popper, among others, was remarkable for the development of the *arco* technique.

began to generate the *extended techniques on the strings* and the *extended techniques out of the strings*. Both influenced the functionality of each hand, particularly the left, which began to be used in different types of *pizzicati. Tapping,* for example, appeared in the 20th century repertoire and was increasingly used by both composers and performers in the 21st century. A similar case happened to *tremolo,* which has been used recently in all bow regions and even with the wood of the bow, as well as with *pizzicato*. (See chapters 3., 4. and 5.) Nevertheless, the development of *arco* during the 20th and 21st centuries continues to be greater than the *pizzicato* and other techniques that appeared, such as percussion and rubbing, among others. (See Table 1 and chapter 3.) All this indicates that a sort of symbiotic relationship between musical styles and playing techniques has occurred constantly. Namely, the emergence of several musical trends in the 20th century generated an expansion in cello playing technique, which at the same time somehow started to establish timbral features that generated and defined musical trends.

It is difficult to define exactly when many of the techniques presented in the following table emerged. Nevertheless, the chronological references are mainly concerned with the time when such techniques were explored in greater depth and developed within the solo cello repertoire by performers from different genres and diverse musical traditions.

In the following table, extended techniques on the strings will be categorised as (I) and the extended techniques that do not involve the strings as (II). The extended techniques related to pitch shift/oscillation, expression, polyphony, and timbre will be categorised as (III), while extended techniques related to the position of the cello or cellist as (IV).

CELLO TECHNIQUES CATEGORISATION TABLE

Fundamental Techniques
(*Double root*)

arco	*pizzicato*

Derived techniques
(D.T)

(Used mainly in the 18th and 19th century repertoire)

Articulation (*arco*) **Bow strokes** ● *Detaché* ● *Martelé* ● *Legato* ● *Jeté* ● *Staccato* ● *Collé* ● *Louré* ● *Ricochet* ● *Sautillé* ● *Spiccato* ● *Tremolo* **Position** ● M.O (*Modo Ordinario*) **Pressure** ● Normal **Pitch oscillation and expression** **(*arco* + Left Hand)** ● *Vibrato* ● Half-tone trill ● *Glissando* ● *Scordatura* (In one or two strings)	**Articulation** **(Right hand *pizzicato*)** ● *Staccato* ● *Legato* **Position** ● M.O (*Modo Ordinario*) **Pressure** ● Normal **Pitch oscillation and expression** **(*arco* + Left Hand)** ● *Vibrato* ● Half-tone trill ● *Glissando* ● *Scordatura* (In one or two strings)

Extended techniques on the strings (I) **(E.T I)** **(Used mainly in the 20th and 21st century repertoire)**	
Articulation (*arco*) **Bow strokes** ● *Detaché* ● *Martelé* ● *Legato* ● *Jeté* ● *Staccato* ● *Collé* ● *Louré* ● *Ricochet* ● *Sautillé* ● *Spiccato* ● *Tremolo* ● Circular bow ● Perpendicular bow ● *Col legno* ● *Col legno battuto* **Position** ● M.O/Pos. Ord (*Modo Ordinario/Normal position*) ● S.P (*Sul ponticello*) ● A.S.P (*Alto Sul ponticello*) ● S.T (*Sul Tasto*) ● A.S.T (*Alto Sul Tasto*) ● On the bridge ● Behind the bridge ● Behind the nut ● At different angles on the strings (45 degrees, 60 degrees, etc) ● Two-bow technique (one bow on the strings and the other underneath the strings) ● Two-bow technique (one played with the right hand and the other with the left hand) **Pressure** ● *Flautando* ● *Scratch* ● Double pressure ● Low pressure ● Noise (aleatory/random) **Pitch shifting/oscillation and expression** **(*arco* + Left Hand)** ● *Vibrato* (systematic) ● Trill/*Tremolo* free ● *Glissando* free ● *Scordatura* free	**Articulation** **(Right and left hand *pizzicato*)** ● *Staccato* ● *Legato* ● *Alla chitarra* ● With fingertip ● With nails ● *Trémolo* ● *Trino* ● *Glissando* **Position** ● M.O/Pos. Ord (*Modo Ordinario/Normal position*) ● S.P (*Sul ponticello*) ● A.S.P (*Alto Sul ponticello*) ● S.T (*Sul Tasto*) ● A.S.T (*Alto Sul Tasto*) ● Behind the bridge ● Behind the nut **Pressure** ● *Bártok* ● *Tapping* **Pitch shifting/oscillation and expression** **(*arco* + Left Hand)** ● *Vibrato* (systematic) ● Trill/*Tremolo* free ● *Glissando* free ● *Scordatura* free

Extended Techniques (II)
that do not involve the strings
(Percussion and rubbing techniques with hands)
(E.T II)

(Used mainly in the 20th and 21st century repertoire)

Articulation (*arco*)
Bow strokes

- *Jeté*
- *Spiccato*
- *Tremolo*
- Circular bow
- Perpendicular bow
- *Col legno*
- *Col legno battuto*

Position

- Bridge

(On top and on the sides)

- Tailpiece

(On the lower, middle, and upper part)

- Spike

(On the lower, middle, and upper part)

- On the scroll
- On the nut
- Front body

(On the sides, under the fingerboard)

- On the back
- (On the lower, middle, and upper part)

Presión

- *Flautando*
- *Scratch*
- Double pressure
- Minimum pressure
- Noise (systematic)

Articulation
(Percussion and rubbing with hands and fingers)

- Simple strokes
- Double strokes
- Drum rolls
- Free percussion

Posición

- Bridge

(On top and on the sides)

- Tailpiece

(On the lower, middle, and upper part)

- Spike

(On the lower, middle, and upper part)

- On the scroll
- On the nut
- Front body

(On the sides, under the fingerboard)

- On the back
- (On the lower, middle, and upper part)
- On the bow (wood and hair)

Extended techniques III **Related to pitch shift/oscillation, expression, polyphony, and timbre** **(E.T III)** **(Used mainly in the 20th and 21st century repertoire)**	
***Arco* + Left Hand position** • Chords • *Vibrato* • Trill • *Glissando* • Natural harmonics • Artificial harmonics • Multiphonics (From 2 to 4 sounds)	**Right hand *pizzicato* + Left hand position** • Chords • *Vibrato* • Trill • *Glissando* • Natural harmonics • Artificial harmonics • Multiphonics (From 2 to 3 sounds)
Extended techniques IV **Related to the cello/cellist position** **(E.T IV)** **(Used mainly in the 20th and 21st century repertoire)**	
• Horizontal position (like a guitar) • Vertical position (standing)	

Table 1. Cello techniques categorization table.

The table above presents a sort of transformation or expansion in cello playing technique, taking as a starting point the fundamental techniques, namely the double root (*arco* and *pizzicato*). These fundamental techniques somehow generated the derived techniques (D.T) and the extended techniques on the strings (E.T I) and the extended techniques that do not involve the strings (E.T II). However, within E.T II there are some techniques that are not connected directly with the double root. Rather, they are taken and derived from the playing techniques of other instruments, such as percussion and rubbing. On the other hand, the extended techniques related to pitch shift/oscillation, expression, polyphony, and timbre (E.T III) again present a connection with fundamental techniques; this is due to the importance of the interaction between both the right and left hand. This table also presents other extended playing techniques related to new physical postures developed for the cello, primarily from the last decades of the 20th century until today (categorised as (E.T IV).

Examining Table 1, it is clear that most of the playing techniques are generated by variations in articulation, position, pressure, expression, and pitch on the strings. All these processes and their combinations applied to the double root (*arco* and *pizzicato*) create specific timbral features. For

instance, the sound A on the first open string articulated with *staccato,* in s*ul ponticello* and with minimum bow pressure does not have the same sonic characteristic if bow *scratch* is used instead. The latter technique has a wider volume range, which certainly diminishes the clear audibility of the pitch, whereas minimum bow pressure stimulates more of the high partials of the open string and therefore the pitch is easier to recognise. On the other hand, when the techniques indicated in Table 1 are created by using the wood and other parts of the instrument, the functionality of both hands and the instrument itself changes (such as when both hands are used to play the cello as a percussion instrument). Finally, the techniques related to physical posture are rather new approaches to the position of the performers with the instrument. This has been used not only to achieve certain sonic requirements but also to represent extra-musical elements and adapt the instrument to new genres such as jazz and rock, among others. However, these positions have been explored primarily through the use of the fundamental techniques (see 3.2.4. and 3.2.5.).

Table 1 is one of the main tools applied in the timbral analysis of the pieces studied in the following chapters of this dissertation. Nevertheless, it will be subject to further studies that intend to accomplish a deeper and more specific categorisation of the techniques regarding functionality, their pedagogical aims in performance, and their use as vehicles of instrumental exploration and artistic creation.

In conclusion, extended playing techniques on the cello were widely developed during the 20th century, specifically from the second half onwards. It was at this time that these techniques appeared more frequently within the solo cello repertoire and were also explored by cellists in alternative genres. Namely, a sort of new standardisation of cello technique started to occur, including both traditional techniques used in the repertoire from previous centuries and the beginning of new technical developments applied to western academic music making and to more popular and even underground musical contexts. The development of extended playing techniques also expanded the sonic range of the instrument and consequently its repertoire. Namely, the use of two fundamental techniques that sought refined and clear sounds (precise in pitch and dynamic range and easily recognised) turned into a tremendous sonic palette that includes noise, overpressure, and large pitch oscillations and dynamic ranges as part of its primary materials.

These new sonic features, discovered and developed by composers and performers in the 20th century, continue to transform and to generate additional sonorities, music styles, and playing techniques (see chapters 3., 4. and 5.). For instance, preparations[5] or modifications of the cello have been used extensively within the experimental repertoire and in improvised music. However, as in extended playing techniques, it is difficult to establish standardisations of such preparations in the cello. However, there are common methods and objects among cellists and musical works. For example, from the turn of the current century and within the work of the Swiss cellist-improviser Alfred Zimmerlin and the Dutch cellist-improviser Ernst Reijseger, the use of paper clips on the strings is encountered recurrently. The use of wood sticks and magnets in different

[5] See more in Fallowfiled (2010: 153–165)

dimensions on the strings can also be encountered in works such as *Trópico de Capricornio* (1984) for prepared cello by Colombian composer Guillermo Rendón and in *Zubia* (2012) and *Oración por Lucas* (2012) by Argentinian composers Julian Galay and Claudio Peña, respectively. On the other hand, the use of extreme *scordatura* tunings and bow preparations have been also explored and precisely notated in pieces such as *Kärlek splittring II* (2012) by Colombian composer Marcos Suárez Cifuentes and *Invisibility* (2009) by Australian composer Liza Lim, among others. These examples clearly demonstrate the rapid shift and continuous expansion of the solo cello repertoire and associated playing techniques over recent decades, consequently leading to new timbral directions.

2. TIMBRAL PHENOMENA

This chapter will examine the following three phenomena applied to timbre: timbral modulation, timbral polyphony, and timbral re-signification. These phenomena are linked to the expansion of cello playing techniques (see 1.) and are the foundations of the repertoire development of the solo cello and cello with electronic media in the 20th century. This section thus intends to investigate the symbiotic relationship among these phenomena from both a compositional and performance perspective to apply them to the analyses proposed in the last three parts of this work (see figure 1).

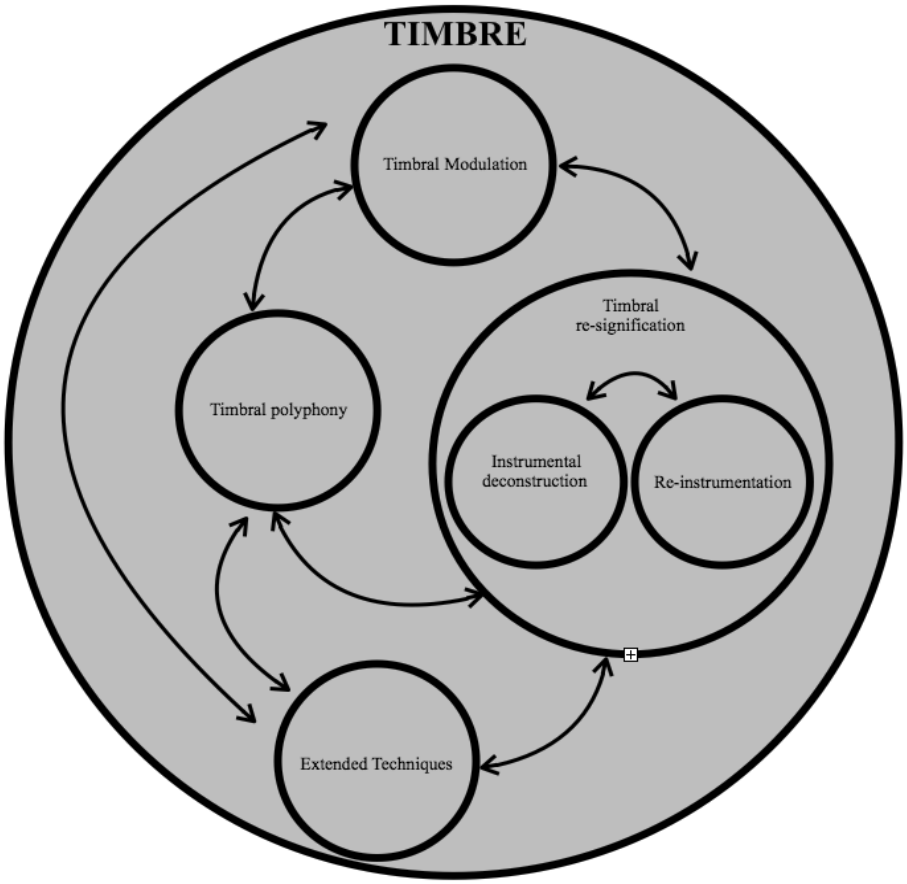

Fig. 1. Timbral phenomena

Timbre is defined by the Oxford dictionary as the character or quality of a musical sound or voice as distinct from its pitch and intensity.[6] This is a primary definition; even if it refers specifically to a musical sound, this definition is not absolute and is challenging to quantify. In this instance, the definition leaves open the fact that this sound component can be approached from whom or what produced it, from who perceives it, and can also be approached in a non-musical fashion. Erik Christensen (1996: 12) categorises timbre within a number of different basic listening dimensions; in other words, timbre has the ability of estimation and identification. According to Christensen (Ibid.)

> Simultaneously with the localization of sound, we gain an idea of the nature of the sound source. Some sounds are sharply attacked, like the breaking of a dry twig […] Sound conveys information of events and objects. When an object is struck, it emits a sound that reveals its material, size and character […] The ears constantly receive large amounts of detailed information about events, objects and beings in the surrounding world. The characteristic and distinctive qualities of sound conveying this information are timbres.

Another approach related to timbre and perception is explained as "the infinitely thin interface, boundary, or skin between ears and percept" (Gritten 2018: 3). Furthermore, he argues that timbre has a role in both sound and perception and brings up a reflexion regarding timbre's value. Namely, in the author's words: "timbre is what begins sounds […] and what enters the ears first" (Ibid). "Once timbre has been articulated—covered over—and become a sound object for a listening regime, there is less—or at least a different—value in the sonic matter; there is a moral here for the discipline of Sound Studies." (Gritten 2018: 6.)

From a poetic perspective, timbre has been remarkably discussed in Jean-Baptiste Barrière's compilation of essays and articles *Le timbre, métaphore pour la composition* (1991). In this work, different personalities of 20th century art music, including Claude Cadoz, Pierre Boulez, Philippe Manoury, Kaija Saariaho, and Barrière himself, among others, express their ideas and directions of timbre regarding its functionality, qualities, and its aesthetic connotations. Such a compilation is indeed an outstanding source that encompasses ideas of timbre from instrumental to electroacoustic music and to the use of sound through new technological devices, analysed mainly through the spectral morphology of sound. On the other hand, a vision of timbre coming from electroacoustic composition emphasises the unidentifiable property of the sound source that electroacoustic music has. According to Smalley (1994: 37)

> In electroacoustic music […] sources and causes are many, varied, evident or ambiguous, actual or implied, unknown or unknowable: we can perhaps detect traces of cause or source but realise that neither can exist in reality. In instrumental and vocal music source and cause are known in advance of listening, but in electroacoustic music they are unveiled by the composer and are discovered (or not) by the listener in the course of the work, and within that single work there may be a great variety of source-cause shadings and strategies.

[6] https://en.oxforddictionaries.com/definition/timbre

However, all the positions discussed previously are mainly related to the specific context and problems in which such composers and researchers are involved in. Hence, their preoccupation seems to come more from an intellectual view on timbre based on sound-source recognition and functionality. Nevertheless, from a practical perspective, the expansion of playing techniques has also generated different views on timbre, sound recognition, its functionality, and even a strong connection with emotions. According to Holmes (2011: 301) "Emotional affect in the performer appears to be related to inner drive towards optimal representation of musical understanding, which then generates the evolution of extended instrumental techniques, allowing ever more imaginative use of timbre."

Moreover, the development of extended playing techniques from the 20th century onward, an achievement attributed to not only composers but also to instrumentalists, proved that the sonic experience and the sound source are not always known in advance of listening. A clear example is the piece by Kristian Ireland *Limit of correction* (2009). This work features a cello that is recognisable by its form and physical characteristics. However, when harmonic sounds on the C string beyond the bow and close to the bridge with variations in bow pressure are played, the reference of cello as a string instrument is loose; this rather embodies the sonic characteristics of a didgeridoo. Furthermore, within the genre free improvisation and within improvised experimental music, where sound objects and electronic processes are primary materials, the functionality of timbre is challenged constantly, which also creates a sort of false sound-source recognition (see 3.2.4.). These shifts in the paradigm of sound-source recognition and timbral functionality that composers and performers have discovered can be connected to the notions of timbral modulation, timbral polyphony, and timbral re-signification.

2.1 Timbral modulation

According to Carlos Mastropietro "The Timbral Modulation is the process where the timbral features of a sonic phenomenon variate according to transformations inputed to the sonic source".[7] However, the author argues that each process within (TM) establishes a Timbral Transformation Regime (TTR) that is determined mainly by a gradual, directional, and temporal interaction.[8] According to Mastropietro (2007: 2)

[7] La Modulación Tímbrica es el PROCESO durante el cual varían las características tímbricas de un material sonoro de acuerdo con transformaciones que se le infringen a la fuente sonora (Mastropietro 2007: 2).

[8] Cada proceso de MT establece un Régimen de Transformación Tímbrica (RTT) que está determinado principalmente por la interacción de las siguientes características principales: gradualidad, direccionalidad, temporalidad (Mastropietro 2007: 2).

> The gradual aspects in the timbral modulation phenomenon are related to the type and extent of the timbral changes, and to the number of moments in which such modulation is developed[9] […] The directionality involves mainly the trajectory established between the initial and final timbral result[10] […] The temporality is given by different variables such as the temporal space occupied by the process, the duration of the *moments* and the temporal separation among them, the change velocity and the way in which the modulation is presented in a context[11] […]

These three aspects come from the transformations inputed to the different parameters and to the features involved in a (TM) process, such as pitch, register, intensity, and their variations. Therefore, the (TTR) is connected to the quantity of parameters associated to each process. This includes velocity of change, temporal separation among the moments, and timbral unlikeness, among others. (Mastropietro 2003: 2.)

Mastropietro proposes (TM) as a strategy for musical analysis and the study of instrumentation, which can be applied to any kind of sound-source, group, or ensemble, and to not only contemporary music but to music of any kind and chronology. Moreover, these different timbral directions can be applied to the compositional and structural aspects of music (Mastropietro 2003: 1–4.).

The application of timbral modulation to musical analysis is made by selecting a musical material—a fragment of a piece or a musical gesture for example—considered as an important element within the development of certain timbral phenomena, even if in itself timbre is not thought as a striking feature. When the material is selected, it is necessary to identify and categorise the sonic phenomena, taking into account that it can be extracted from a general texture to proceed with the specific analysis. Also, the analysis process can be purposeful, namely by using a procedure clearly thought by the composer, or it can be involuntary, or rather the author's contribution. In other words, the primary objective is to analyse the sonic phenomenon itself even if this was not part of the composer's intentions. Furthermore, it is important to not only identify the timbral phenomena but also to remember that the results can be applied to aspects of composition and instrumentation and to enhance the notion of timbral modulation towards future studies. (Mastropietro 2003: 3.)

Although this application of timbral modulation in musical analysis is proposed by Mastropietro to be used mainly within music written in traditional notation and from a compositional

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[9] La característica de gradualidad de un proceso de MT está dada, en primera instancia, por el tipo y magnitud de los cambios tímbricos y por la cantidad de Momentos que la componen (Mastropietro 2007: 2).

[10] La característica de direccionalidad de un proceso de MT estará dada por el tipo de trayecto tímbrico establecido entre la resultante tímbrica inicial y la final (Mastropietro 2007: 3)

[11] La característica de temporalidad de un proceso de MT estará dada inicialmente por las siguientes variables: el espacio temporal ocupado por el Proceso, la duración de los Momentos y la separación temporal entre éstos, la velocidad de cambio, la forma de presentación en un contexto (Mastropietro 2007: 3).

perspective, in this dissertation such a tool will be applied to non-notated pieces and pieces that use other forms of notation. For instance, within experimental music and music genres such as free improvisation, rock, pop and jazz, in which the instrumentalists have also been pioneers of technical developments and new timbral directions (see 3.2.5.), the analysis of timbral aspects can be approached from a listening process while maintaining the same procedures. Thus, what changes in the analysis is only the musical material interface, which in this case is not visual but sonic.

The solo cello and cello with electronic media repertoire from the 20th century onward has been strongly developed under characteristics that emphasise new timbral directions (see chapters 3, 4, and 5). Therefore, Mastropietro's proposal is certainly appropriate to analyse such repertoire. Moreover, the notion of timbral modulation contributed to the development of several music trends and different playing techniques in the cello that could be used within a single piece and in diverse contexts (see 1. and 3.). For instance, an analysis of Zoltán Kodály's *Sonata for solo cello* (1915), which is one of the most well-known pieces of the early 20th century, revealed aspects of gradual, directional, and temporal interactions within timbral modulations. These interactions were achieved mainly by constant changes in bow positions and the use of different *pizzicato* techniques (see 3.1.) In the middle of the 20th century, Bernd Alois Zimmermann, influenced strongly by serialism, developed in his *Sonate für violoncello solo* (1959-60) bow transitions from *alto sul tasto* to *alto sul ponticello* into trills and fortissimos in the low register with *sul ponticello*, among other techniques that generate constant timbral modulations (see 3.2.1.). Within the Colombian repertoire of the 21st century, which is the focus of this dissertation, timbral modulation processes are included in more complex ways. An example is seen in the piece *Pieza para violochelo solo* (2009) by Daniel Leguizamón, where microtonal procedures contribute to timbral transformations and variations (see 4.2.6.).

2.2. Timbral polyphony

Akin to timbral modulation, timbral polyphony can be applied as a compositional and instrumental-technical strategy and a tool for musical analysis. Taking the model of Mastropietro's previous application of timbral modulation and the axis sound/noise used by Saariaho (1987: 93), the notion of timbral polyphony is applied within the analysis process in chapters 3, 4, and 5. Although the sound/noise axis in Saariaho's music mainly constitutes a means of creating tension and replacing the dynamic function of harmony (Ibid), it can also be used to analyse polyphonic processes applied to timbre within solo instruments. According to Saariaho (1987: 94)

> I have also used the sound/noise concept to modulate the contour of a single instrument, as in my piece *Laconisme de l'aile* (1982) […] My intention here was to create an impression of polyphony on several levels for a solo instrument, to expand the melodic line in some way. […] To qualify the traditional conception of timbre's and harmony's respective functions, I would say that the function of timbre is considered as being vertical and that of harmony as horizontal. Harmony therefore provides the impetus for movement, whilst timbre

> constitutes the matter which follows this movement. On the other hand, when timbre is used to create musical form it is precisely the timbre which takes the place of harmony as the progressive element in music.

The term timbral polyphony in this dissertation refers to the juxtaposition or superimposition of two or more sounds that each have a different sonic characteristic regardless of any melodic intention. Namely, the word polyphony refers strictly to the existence of more than one sound executed simultaneously. In other words, a group of sounds that have a different timbral quality and are organised vertically establish a timbral polyphony. However, it is easier to notice this phenomenon when the sound sources are different by nature. For instance, in a quartet formed by flute, oboe, cello, and snare drum, it is rather obvious that the timbral polyphony is constant, since the nature of the sound of each instrument is significantly different. By contrast, in a group of three flutes there is not an immediate assumption of timbral polyphony; however, such polyphony can actually exist as each sound source has its own and unique timbral characteristics. Nevertheless, the average similarity in sound is higher in the flute trio example than in the aformentioned quartet. In fact, there are several combinations of instruments and even non-musical-like sound sources that can show less and more similarity in their sounds; it is thus possible to establish different categories of timbral polyphony.

Regarding this dissertation, the definition of timbral polyphony seems to be more precise and easier to define. Within a solo instrument such as the cello, there is only one way to generate a superimposition of two or more sound layers with different sonic characteristics. This is achieved by using a different playing technique for each layer; noise as a playing technique is included (see 1 and 3.2.3). A simple example of timbral polyphony can be seen in a gesture for solo cello that includes an open-stringed left hand *pizzicato* and a bowed sound on another open string sounding simultaneously (see chapters 3, 4, and 5). In addition, when both of these techniques are executed on a single string and on the same pitch there is clearly a timbral polyphony process, as the sonic features inputed by both techniques are different even if the frequency attack is the same. More complex achievements in timbral polyphony can be produced by juxtaposing or superimposing additional sound layers. Nonetheless, if such processes are not in a time frame that maintain the simultaneity of the sounds, the gesture will probably lose its polyphonic character.

The axis sound/noise introduced by Saariaho, which is clearly a timbral modulation when used horizontally, can be seen as a timbral polyphony strategy when used vertically. For example, a simultaneous gesture that includes one layer executed by *pizzicato* and the other layer with a noisy bow articulation (scratch) clearly provides two different timbres. On the other hand, this concept can be applied to analyse different timbral characteristics in noises depending on pitch, dynamic, gesture, and playing technique (see 3.2.3.).

Both notions of timbral modulation and timbral polyphony are packaged in what can be called poly-timbral development. This refers to the inclusion of different timbres or sounds with different timbral characteristics in a single instrument regardless of any position or directionality. Hence, a timbral modulation process—in any of the interactions introduced by Mastropietro—is poly-

timbral since it generates two or more sounds with different timbral features. However, a poly-timbral development can be polyphonic only when the elements used are simultaneous and not successive. Hence, both concepts can be complementary. However, poly-timbral development can be applied in different directions, whereas timbral polyphony (being poly-timbral *per se*) depends on its simultaneity.

2.3. Timbral re-signification

To better understand the analyses proposed in chapters 4 and 5, it is necessary to explore the phenomenon of timbral re-signification, which can be approached via instrumental deconstruction and re-instrumentation. Such notions are also applied within the analyses in chapters 3, 4, and 5, mainly following the same model used by Mastropietro through the tool timbral modulation in the pieces written in traditional notation. As discussed before, listening is the analysis approach for the pieces that use other types of notation and non-notated pieces (see 2.1.).

According to the discussions previously introduced, timbre is certainly related to sound source, which has several functionalities or a specific functionality that provides references or significations to the listener. Nevertheless, this matter goes beyond the definition of timbre itself. Specifically, it is not about what timbre is—its meaning—but rather to the translation of that unique sonic characteristic into an object with certain functionality. Gritten (2018: 4) speaks about how "timbre is let down by being unarticulated within listening regimes; this is because it is the advent of the sound object, the manner in which the ears are drawn out of their slumber into auditory life." Namely, there are preconceived systems of listening that relate sound source with its timbre and vice versa. Furthermore, it can explain, for example, how musical instruments are sound sources that are strongly attached to preconceived listening regimes depending on the musical context they represent. Gritten (Ibid.) also adds that

> An essential point of departure for the phenomenology of timbre within musical listening is the distinction between timbre and sound, or perhaps between the sonic matter that is perceived and the auditory object that is constituted in the mind. There is certainly a question to be considered regarding whether timbre is supervenient upon sound, or whether sound is supervenient upon timbre; put another way, whether timbre generates sound or vice versa. This is more than a matter of semantics.

This can be also connected to Smalley's idea of sound cause, in which he argues that "Traditionally, […] there is an inherent, culturally imbedded, stable *source bonding* in music." (Smalley 1994: 37). He defines source bonding as "the natural tendency to relate sounds to supposed sources and causes, and to relate sounds to each other because they appear to have shared or associated origins." (Ibid).

The previous ideas point out that there are clear expectations from the listener on how a certain sound source should sound, which establish specific timbral references determined by every sound source. For example, the sound of a river current—its timbre—intrinsically has a reference to the

river. This, on a basic level, is rather clear to understand. Nonetheless, when it comes to manipulating or inputing an action to a sound source (for instance, to sound objects and musical instruments that by nature or virtue give reference to something, such as its material, its meaning, its design, its functionality), the case can be different depending on the action-manipulation process. For example, "when an object is struck, it emits a sound that reveals its material, size and character." (Christensen 1996: 12.) However, the way that the object is struck and the material of the medium that drives the striking action can generate a "confusing" experience to the listener in terms of material, size, and character. Hence, the action and the medium that make a sound perceptible can provide another significance to its timbre and consequently to the manipulated object. However, it seems to be a convergent point within the perspectives of the authors previously discussed; the existence of a hierarchical order in listening—rather cultural or purely perceptual—establishes in the first place the source (sound object or musical instrument) and secondly the cause or action inputed.

Therefore, the notion of timbral re-signification in this dissertation refers to how extended playing techniques give different significations to the cello and its sound, thus establishing a different hierarchical relation between sound source and action. This dissertation also aims to present examples in the solo cello and cello with electronics repertoire where the use of extended techniques and electronic devices is the substance towards a better understanding of new timbral directions and to analyse timbre from a more performance-expressive (Holmes 2011: 1) perspective.

Instrumental deconstruction, which is applied as an inverted process to the concept *instrumentalizing,* explains the performabilty and possibilities of sonic manipulation of sound objects within experimental music, mainly through improvisation (Keep 2009: 113). Namely, Keep states how re-signifying the sound and functionality of an object allows it to become a musical instrument. Instrumentalizing is one of the keys to understand the idea of instrumental deconstruction, as the use of sound objects as musical instruments changed in one way or another the hierarchical order headed by "real" musical instruments and liberated traditional notions of what and which instruments the latter are. (Keep 2009: 114–116.) According to Biffio (2011: 1) "Extended playing techniques describe gradual extensions of well-known playing techniques as well as radical changes." Extended playing techniques de-code or deconstruct the traditional way of playing the instrument. This includes changes in the functionality and sound of the instrument, generating an instrumental deconstruction phenomenon. Such phenomenon is present within several pieces of the solo cello repertoire of the 20th and 21st centuries (see 3., 4. and 5.). This is particularly the case in *Pression* (1969) by Helmut Lachenmann, where the instrument is approached more as a sound object than as a "pure" musical instrument.

On the other hand, the idea of re-instrumentation in this dissertation refers primarily to the interpolation of different instrumental techniques or performance tendencies (see 3.2.5.) in the cello. For instance, techniques such as power chords used mostly on electric guitar, different arpeggios, percussive techniques, and blowing that have been integrated into cello performance

constitute a clear notion of re-instrumentation; the instrument is thus re-signified by adopting techniques that were not developed within its traditional technique (see 1) but rather in other instruments (see 3, 4, and 5). However, the idea of re-instrumentation in this dissertation is mainly applied to the analysis of the repertoire for cello and electronic media, particularly when the sound of the instrument is re-signified by live electronic processes. For instance, amplification and convolution processes modify the intrinsic sound of the instrument, turning it into a new sort of instrument that consists of its own natural sound, meaning, and form and the features that the amplification and convolution process input (such as increased volume, sound projection, and space). Hence, this tool is effective in analysing how the inputs are not only actions or mediums that re-signify the sound of the instrument but also how they become part of a new and more complex unit.

3. NEW TIMBRAL DEVELOPMENTS IN THE SOLO CELLO AND CELLO WITH ELECTRONIC MEDIA REPERTOIRE IN THE 20TH AND 21ST CENTURY

This chapter primarily constitutes a foundation to better comprehend the main focus of this dissertation, specifically the emergence of several works for solo cello and cello with electronic media by Colombian composers in the 21st century. Such repertoire reveals a common interest in exploring different timbral directions through the use of extended playing techniques and electronic media (see 3, 4, and 5). Furthermore, this chapter will also analyse chronologically the extension of the cello playing techniques on the basis of its symbiotic relationship with timbral developments. This will be achieved by examining some of the most well-known pieces of the solo cello and cello with electronics repertoire from the 20th and 21st centuries. At the same time, this chapter will introduce a timbral analysis through the cello techniques categorisation table tool (see 1) and the first chapter of this dissertation, which will facilitate categorisation of the pieces studied into different musical trends and compositional styles. Therefore, the denominations and techniques included in the cello techniques categorisation table and the concepts examined in chapter 1 will be regularly applied to this and the following chapters.

Most of the pieces analysed here are from Europe and the United States. This is mainly due to the fact that the most well-known composers and performers that contributed to the development of timbre and playing techniques are established in these territories. However, in regions such as Latin America, where composers and performers have also displayed in their work important progress in terms of timbre and playing techniques, some pieces will be introduced with the aim of further detailed analysis in future studies. This also shows a geographical directionality that starts from Europe and the United States, leading to Latin America and ending particularly in Colombia, since the development of the solo cello and cello with electronic media repertoire in Colombia is rather recent and is strongly influenced by Europe and the United States, which were pioneers in such developments.

Despite the success of the cello as a solo instrument since its appearance, very few pieces for solo cello were composed in the early 20th century[12] (Stowell 2000: 138.). Moreover, despite the fact that by the end of the 19th century there were already major changes in compositional techniques and in the construction and physical development of the cello, some of the most important pieces for solo cello composed during the early 20th century presented very few radical changes (Biffio 2011: 1) related to timbre and playing techniques. In other words, despite the interest of several composers in exploring new musical trends such as *noise*, serialism, and electronic music, which at that time began to consider timbre as a key element to be developed, there was still room for compositional styles representative of older traditions. For instance, the

[12] As it is written in the introduction, the definition of cello pieces in this case is not related to cello studies, methods or treatises.

Suites for solo cello 1 in G major, 2 in D minor, and 3 in A minor op. 131c (1915) by Max Reger and *Sonata* for solo cello in G minor (1925) by Granville Bantock are two pertinent examples. These pieces require the performer to exhibit a high level of technique and expression, nevertheless, they present a treatment of sound and playing techniques that had been developed already in the 18th and 19th century (see 1, Table 1).

On the other hand, in their compositional styles these pieces are strongly connected to the Bach *Suites*, for instance, in the use of harmonic sequences and their melodic conduction. Nonetheless, from the same period to the end of 1940s, other pieces such as Zoltán Kodály's (1915) and Paul Hindemith's (1922) respective sonatas for solo cello brought different timbral and technical perspectives (see 3.1.). For instance, Power (2013: 12) argues that in Kodály's sonata "the use of *scordatura* not only affects the timbre and the color of the cello, but creates new possibilities for chords and expands the range of the cello." However, despite such contributions, in this piece elements such as form, rhythm, and pitch range are the most striking features and are more developed than timbre.

In contrast, in the second half of the 20th century, due to the emergence of many musical movements and because of the specific sonic and technical characteristics of the cello (such as wide pitch range and flexibility in articulation, dynamics, and expression), several solo cello works suddenly appeared (Uitti 2000: 223). Furthermore, not only was the novelty in playing techniques and form the most striking features, but also the concept of timbre (see 2.1.) started to consolidate (Cadoz 1991: 19). In addition, the development of extended playing techniques and the advent of electronic devices influenced composers and resulted in new compositional processes, which were considered as starting points towards a paradigm shift in cello timbre. These facts also enabled performers to create alternative uses in the nature of the sound and thus generated different directions in the repertoire (see 3.1.). Therefore, during the second half of the 20th century, the quantity of pieces for solo cello increased dramatically compared to previous centuries. The birth of the cello with electronic media was also a striking fact that contributed to the expansion of the repertoire, which has developed strongly since the 1960s. Furthermore, composers from different parts of the world began to expand the repertoire. (Stowell 2000: 137–145). According to Homuth's cello literature compilation (1994: 1–106, 257–274), more than 1500 pieces for solo cello and cello with tape or electronics have been composed (see 3.2.).

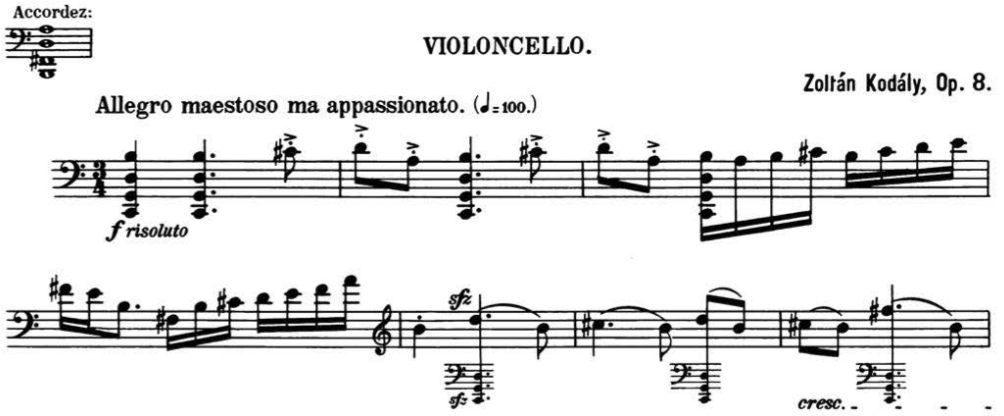
3.1. Timbral explorations in the repertoire for solo cello in the first half of the 20th century in Europe

Timbral explorations in this section refer strictly to antecedents of changes in the use of cello sound in pieces composed within the first half of the 20th century.[13] These characteristics established the

[13] The concept timbral exploration will be used and explained along the text differently depending on the chronological context.

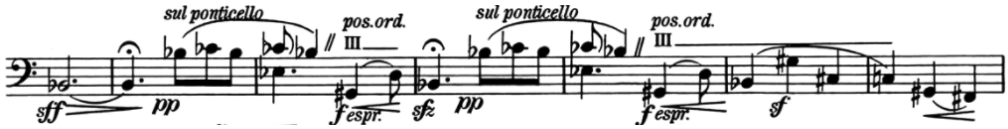
first approaches towards new timbral inputs. During this period, however, few pieces appeared with radical innovative ideas related to timbre. However, some composers interested in national elements, atonalism, and serialism seemed to be willing to explore new cello sounds, and at the same time the development of these music trends created new perspectives in cello sound (see analyses below). Moreover, through the exploration of new playing techniques, such as the combination of extreme bow positions and different articulations, composers generated new timbral directions. These explorations, however, seemed to have happened independent of the sound itself. In other words, a strong influence of extra-musical and political thoughts engendered a search for the expression of ideas through the music, rather than concern about the phenomenology of sound. However, the purpose of this chapter is not to emphasise these political and extra-musical issues, but to analyse timbral explorations and new cello sound advances through excerpts of these pieces.

Kodály's sonata can be considered one of the most important works for solo cello of the early 20th century. In the piece Kodály emphasises his interest in including elements from Hungarian folk music (Stowell 2000: 139), using scales and certain playing techniques (such as trills in double stops, *tremolo*, and percussive *pizzicato*). These constitute the first attempts to the re-instrumentation phenomenon within the solo cello repertoire of the 20th century. In addition, the piece brings special performance requirements related to sound. An example is the use of *scordatura* in the C and G string one semitone down (see Ex. 3.1). Not only does this create the possibility to find another conjunction of harmonic partials, but it also allows more vibration in the strings, which permits the cellist to produce percussive sounds on the fingerboard



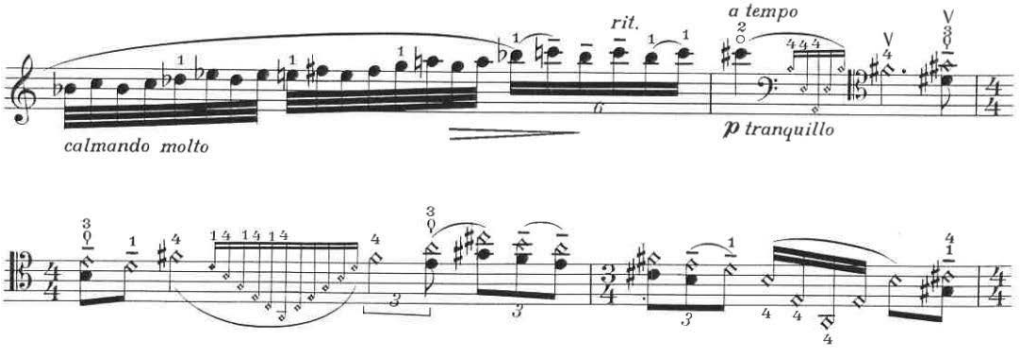
Ex. 3.1. *Sonata* by Kódaly (1915: 1).

Another example is the change of bow position from *sul ponticello* to *pos. ord,* which reveals two timbral planes (see Ex. 3.2). The first achieves a kind of metallic sound rich in high harmonic partials. The second, in contrast, maintains the traditional cello sound.[14]



Ex. 3.2. *Sonata* by Kódaly (1915: 2).

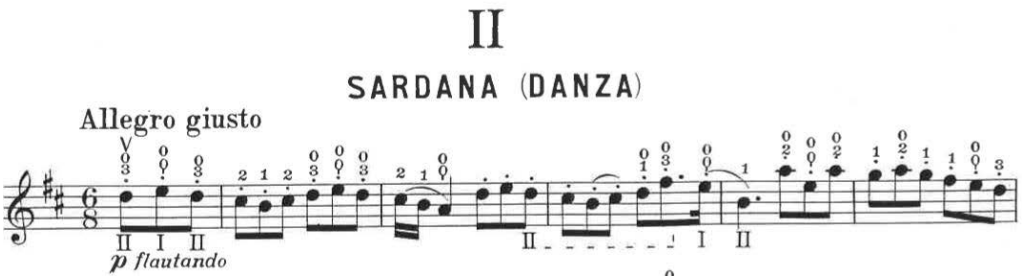
Approximately 10 years after Kodály's sonata, another important piece that shows the use of national elements emerged. The *Suite para cello solo* (1926) by Gaspar Cassadó is structured in a traditional suite style, but in this case with three Spanish dances: *Zarabanda, Sardana*, and *Jota*. Although the piece resembles a Spanish folk music atmosphere, it also contains, especially at the beginning of the first dance, a clear quotation of Kodály's sonata. However, the piece has two important passages regarding new timbral processes. The first is a passage generated from artificial harmonics (see Ex. 3.3). This gesture presents a variation in the sound from the previous and following phrases, which exposes in transpositions the main motive of the first dance.



Ex. 3.3. *Suite para cello solo* by Cassadó (1926: 4).

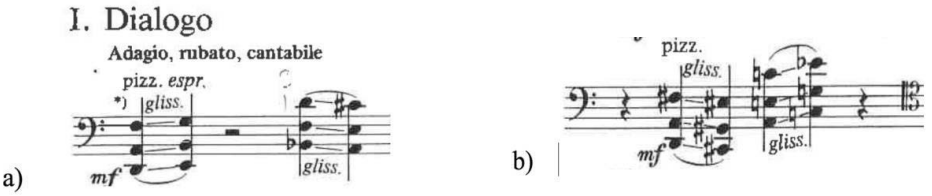
[14] Changes in bow position were not used extensively in the first half of the 20th century. However, its transitions were widely used and established as a basic technique in the second half of the 20th century as well as the concept of timbral modulation.

The second passage is in the introduction of the 2nd dance, which shows the use of natural harmonics and *flautando* in a high register (see Ex. 3.4). Both artificial and natural harmonics, and the combination with *flautando* generates a brighter timbre.



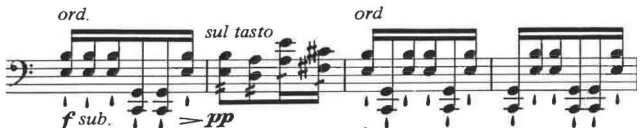
Ex. 3.4. *Suite para cello solo* by Cassadó *Suite para cello solo* by Cassadó (1926: 4).

The *Sonata* for solo cello (1948–53) by György Ligeti also shows the use of Hungarian national elements explored mainly by Kodály and Bartók. The richness of the piece is associated with the structure of two-voice counterpoint and a responsorial discourse between them and the melodic lyricism in the *Dialogue*. In the *Capriccio,* the virtuosity is seen in the temporal treatment, which is extremely fast. Furthermore, the two main features regarding new timbral approaches are the *pizzicato* chords and the *sul tasto* bow position. The *pizzicato* must be played into a glissando and produces a special percussive-melodic sound effect that, in contrast to regular *pizzicato* technique, accomplishes a microtonal passage (see Ex. 3.5: a) and b)).



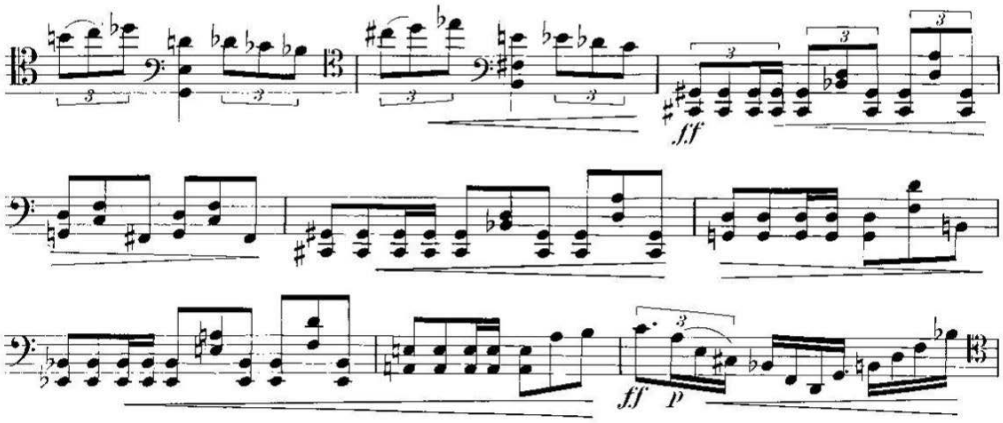
Ex. 3.5. *Sonata* by Ligeti (1948–53: 3).

The *sul tasto* bow position using *tremolo* and shifting to *modo ordinario* in *marcato* generates two contrasting timbres in the same passage (see Ex. 3.6). The first is a dark sound in *pp* with not many partials audible and the second is a powerful interval of a fifth in *ff* with an open range of partials perceptible.



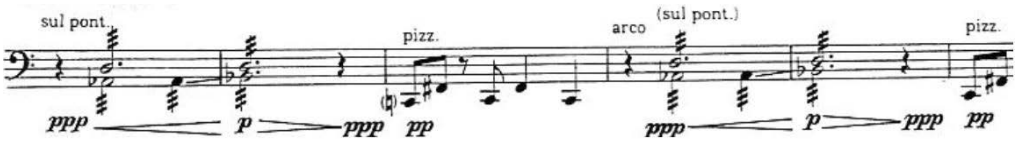
Ex. 3.6. *Sonata* by Ligeti (1948–53: 5).

The solo cello repertoire in the early 20th century also shows another paradigm with its roots in atonalism and serialism. Those movements did not generate novelty in the sound itself but generated a particular sonority based on the breakdown of a tonal centre and the structure of pitch organisation. Furthermore, there are also specific passages seen as keys of deeper timbral explorations in the future. In 1923, Paul Hindemith composed his *Sonata* for cello solo in five contrasting movements. Although Hindemith is not considered a serial composer, the influence of Schoenberg's and Webern's music is notable. The piece contains weighty passages and demands many register shifts and strong intensity in the double-stop passages (see Ex. 7).



Ex. 3.7. *Sonata* by Hindemith (1923: 2).

Regarding the musical aesthetic of the post-war period, Rudolph Escher includes a recurrent use of *sul ponticello* in double stops jumping to *pizzicato* in his *Sonata per violoncello solo* (1945–48). Moreover, these sonorities combined with glissando and dynamic ranges going gradually from *pp* to *p* and vice versa constituted a change of movement between two timbral planes (see Ex. 3.8). The *sul ponticello* is a fast and light gesture; the *pizzicato* is a slow and heavy one.



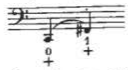
Ex. 3.8. *Sonata* by Escher (1945–48: 4).

Luigi Dallapiccolla's *Ciaccona, Intermezzo e Adagio* (1947) continued with the impact of post-war music and seralism. The piece encompasses both serial and tonal elements and its timbral development evokes Hindemith and Escher procedures. However, from the preface itself written by Cassadó, the piece exposes the performer to a new sound universe through certain technical elements rarely used before in the solo cello repertoire (see Ex. 3.9).

When studying the work at hand, the violoncellist faces several new technical problems. These new problems naturally require practice of new principles in order to obtain the intended sound effects and in order to guarantee the necessary familiarity with the style of the composer. With the intention of letting the performer benefit from my own experience I offer here with the approval of the composer the fingering and bow indications as accurately as possible.

The following indications are to be observed:

The sign + always means pizzicato with the left hand. When this sign is put in paranthesis, as for instance in measure 1 [(+)], it means that the pizzicato should only be accomplished in order to touch the bow to the string as quickly as possible.

In measure 19 the step  is played only with the *left hand*, the passage  in measure 34 is to be played only as *pizzicato*, with the *left hand* (without bow).

For the chord  in measure 42 and in other analogous passages it is recommended that one finger be placed loosely upon the third string in order to avoid vibration.

At the passage marked *col legno (battuto)* in measure 94, and in similar cases, one should strike not only with the wood but also with part of the hair of the bow.

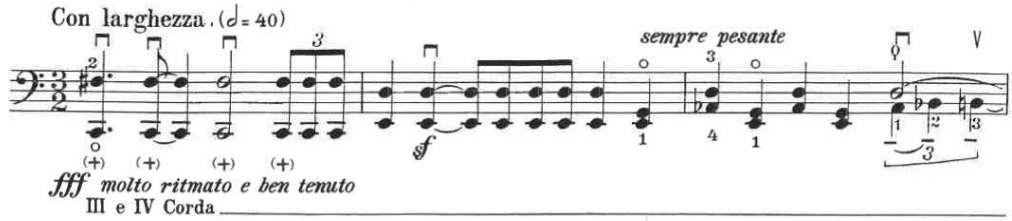
The problem of fingering in the *quint intervals* (measure 201) was solved for the first time in a way, allowing a more comfortable and at the same time more expressive execution of such intervals.

In the entire passage between measures 264 and 271 the seventh (B minor) must be extraordinarily flatted.

G.C.

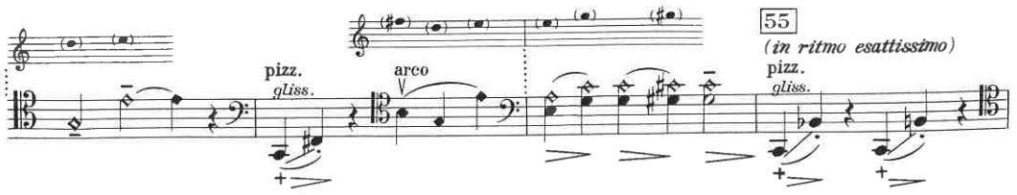
Ex. 3.9. *Ciaccona, Intermezzo e Adagio* by Dallapiccolla (1947: 3).

The first movement opens with double stops *fff* in the low register plus left-hand *pizzicato*, achieving a particular percussive sound (see Ex. 3.10).



Ex. 3.10. *Ciaccona, Intermezzo e Adagio* by Dallapiccolla (1947: 5).

This movement also presents a sort of dialogue between artificial harmonics and *pizzicato* in glissando, leading the passage into two different timbres (see Ex. 3.11).



Ex. 3.11. *Ciaccona, Intermezzo e Adagio* by Dallapiccolla (1947: 7).

Percussive sounds and more than one timbral plane were occasionally used in these cello works. However, within the pieces composed by the end of the 1940s, composers were increasingly daring in further exploring the sound of the cello and created, for instance, diverse sound planes and melodic elements focused on the timbre itself. Therefore, new timbral approaches generated extended techniques, and vice versa, which evolved symbiotically, making impossible the existence of one without the other.

3.2. The expansion of the repertoire from the second half of the 20th century onwards: New musical thinking and new sonic approaches

From the end of the 1940s, several innovative musical movements emerged mainly in Europe and the United States and expanded quickly to the other the continents of the world. Composers established techniques and concepts that led to defined styles such as integral serialism, *musique concrète*, electronic music, indeterminacy, aleatoric music, micro-polyphony, new complexity, minimalism, graphic notation, spectral music, music theatre, and stochastic music (Padilla 1995: 3–4). Although there were differences among these musical trends and the strict structures that some of them presented, there were two convergent points. The first was the idea of

experimentation. In other words, composers and performers aimed to go beyond traditions and to break previous rules through new processes; thus the impulse came from experimental methods. The second point was the awareness of sound itself, namely, despite centuries of traditional notation—and its hidden relationship with sound as the main component of music—both composers and instrumentalists started to understand the idea of musical notes as proper sounds with certain characteristics and multiple possibilities of manipulation (Holmes 2002: 335).

The awareness of sound and the idea of experimentation were also later blended with other musical trends, such as world music, jazz, rock, and free improvisation and expanded worldwide (Holmes 2002: 408–428.).

Consequently, terms such as avant-garde, art-music[15] (Rogers 2013: 118–119), and experimental music became more and more popular, ending up as defined styles with many musicians and followers involved. Furthermore, these new musical trends took place not only in conservatories, theaters, and music halls but also in art galleries and other unconventional musical arenas (Rogers 2013: 1–10). Meanwhile, the development of electronic devices increased and their inclusion and combination with other arts, traditional classical instruments, and instruments that belonged to non-western musical traditions (Holmes 2002: 337–406). In addition, the influence of visual arts and the appearance of new communication means opened new horizons for creating music. Thus, these technological advances continued to generate new trends that evolved into the nowadays well-known sound art, soundscape, multimedia art, and telematic performance, to name but a few. These trends also began to shift the paradigms in making music and encouraged both performers and composers to change their traditional roles (Rogers 2013: 1). All these factors seemed to have strongly influenced the solo cello repertoire, generating several pieces with new features and means of playing.

Timbre was one of the elements that bifurcated the cello repertoire in the second half of the 20th century. In other words, one group of musicians continued using the instrument and its sound in a traditional way, which has continued until today, while progressive composers and performers explored techniques and the timbre of the instrument and its combination with apparatus, artefacts, and new instruments into new ways of making music. The result is a rich sonic range that comes from the sound material itself to radical philosophies of creating music, including other arts. The sound of the cello experienced a rapid change in its sonic paradigms and consequently the instrument became popular and was included in many of the musical trends that appeared at the time (Uitti 2000: 222).

[15] In this case, the term refers to the combination of visual arts and music and not to the concept of artistic music, which is used mainly to separate non-western and academic western music.

3.2.1. The influence of *musique concrète* and electronic music on the solo cello repertoire

The establishment of music studios, tape recorders, and electronic instruments at the end of the 1940s and in the early 1950s opened new approaches to musical composition and emphasised the sound itself as the main element to be explored (Holmes 2002: 334–335). In the same period, Pierre Schaeffer instituted a music studio in Paris under the name *Groupe de musique concrète*. Olivier Messiaen, Pierre Boulez, and Karlheinz Stockhausen produced some works there. In Germany, Herbert Eimert and Stockhausen pioneered another European music studio in Cologne, which unlike Schaeffer's, worked exclusively in music generated by electronic means. By this time, Bebe Barron and Louis Barron also set up a private studio in New York. However, in the same city Otto Luening and Vladimir Ussachevsky had been producing works for tape at Columbia University and John Cage had already composed music collages via electronic means (Griffiths 1979: 15–18).

By the mid 1950s, Luciano Berio and Bruno Maderna led the *Studio di Fonologia Musicale* in Milan where the first attempts were made at combining live and electronic media. During the early 1960s, several music studios were formally established in Europe, the United States, Asia, and South America. Radio stations, universities, and technology companies contributed to studios in Munich, Warsaw, Tokyo, Stockholm, Helsinki, London, Eindhoven, Buenos Aires, New York and San Francisco, among others. At this time, composers had the opportunity to manipulate, transform, and analyse a large variety of sounds in different ways and with different tools. For instance, simple processes such as superimposition, reverse, change of speed, synthesis of sound, and editing enabled composers to go deeper into timbre, which was considered as a striking element (Griffiths 1979: 15–18, Holmes 2002: 41–105).

These sound transformations and recording explorations brought special features that had not been heard before and encouraged composers to apply some of the processes and results to traditional instruments. These attempts generated new pieces for acoustic instruments with a sort of electronic thinking. Furthermore, the new instruments stored in the studios, which in many cases were prototypes and not specially designed for making music, displayed a range of sounds that could not be produced with classical instruments through traditional techniques. This generated curiosity among young composers, who started to visit the studios and work in them. However, these sound "disadvantages" that classical instruments had compared to electronic ones somehow obligated composers and performers to search for unconventional sounds with traditional tools[16] (Griffiths 1979: 8-10).

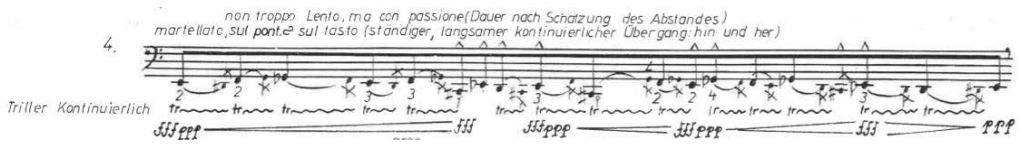
[16] For further readings related to the topic see "1.2 Retrospect" in (Griffiths 1979: 8-24)

Significant works for solo cello

Composers in the 20th century had the opportunity to more deeply analyse complex acoustic procedures. The development of technology allowed acoustic issues to be tested, proved, analysed, and, for instance, observed. The first synthesizers and oscillators also made it easier to understand the physical qualities of sound. In addition, with the arrival of computers tools such as frequency analysers and spectrometers were commonly used in studios at the time, allowing composers to investigate physical problems in sound (Holmes 2002: 117–238).

Consequently, the solo cello repertoire started to emphasise a more sophisticated and systematic treatment of sound (Stowell 2000: 144, 145). However, traditional instrumental techniques could not achieve all the timbral processes that composers found through the use of the electronic devices; therefore, the advent of new means of making music and new instrumental techniques influenced each other and interacted symbiotically (see 1). Not all composers who worked in studios or with electronic devices applied either processes accomplished through their electronic music experience or new timbral explorations to acoustic instruments. A clear example is Luening's *Three Etudes* (1960) for solo cello. Luening, who was a pioneer in electronic music, used in this piece traditional techniques (instead of radical ones) that could give different perspectives on the timbre of the cello.

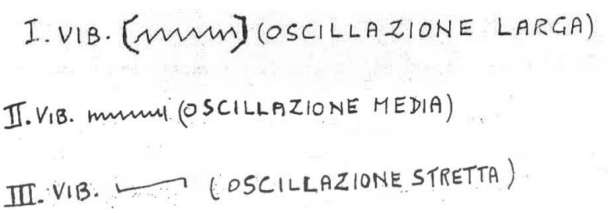
Unlike *Three Etudes*, the *Sonate für violoncello solo* (1960) by Bernd Alois Zimmermann displays a wide use of extended techniques and emphasises timbral and timespace modulations that were not used before into a serial style within the solo cello repertoire. In other words, the piece has strong elements from serialism, especially pitch development, the constant register shifting and pointillism, but also has a detailed exploration of the timbre of the instrument. The piece has bow transitions from *alto sul tasto* to *alto sul ponticello* into trills, *fortissimo* in the low register with *sul ponticello*, *tremolo pizzicato*, tapping *pizzicato*, and *col legno* in long notes, among others (see Ex. 3.12).



Ex. 3.12. *Sonate* by Zimmermann (1960: 1).

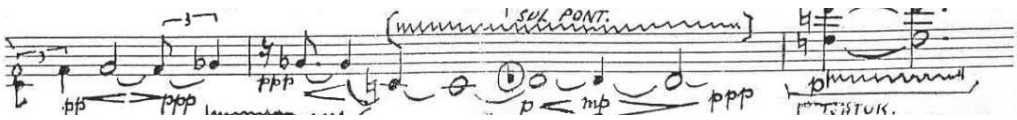
Giacinto Scelsi is known mostly for his music for string instruments in which he developed a unique style based on harmonic illusions. These were achieved through microtonal fluctuations from one pitch and a detailed use of dynamic ranges. The use of electronic media is not a striking feature in his work. However, it is known that he sometimes recorded his pieces and made transcriptions during the composition process (Uitti 1995). At that time, electronic music

composers were practically the only ones using these methods; Scelsi's method has a strong relationship with the concept of composing with sound material. His *Trilogy* (1957–64) for solo cello was considered by himself as an "autography in sound" (Uitti 2000: 220), in which the timbre is used systematically. In the first piece, *Triphon* (1957), Scelsi expands the cello into two sonorous planes by using a metallic mute that strides the third and fourth string. The result is a noisy sound accentuated by bow attacks in one plane and a sort of deaf timbre where fast events occur in the other plane. Another feature in the piece (also used in most of his pieces for strings) is the literal definition of *vibrato* as an oscillation with specific characteristics (see Ex. 3.13).



Ex. 3.13. *Trilogy* (I mov) by Scelsi (1957–64: 2).

The second piece, *Dithome* (1957), also shows two sonorous planes. One plane explores slow passages in the low register with an expansive pulsed *vibrato*. The other plane develops faster fragmented events in the middle and a high register led by a modified octave interval—the upper note a quarter tone higher—played with different attacks. The two planes interact in juxtaposition or individually as single lines in the piece, sometimes into extreme timbral modulations from *sul tasto* to *sul ponticello* (see Ex. 3.14).



Ex. 3.14. *Trilogy* (II mov) by Scelsi (1957–64: 15).

The third part, *Ygghur* (1961–4), starts with a static polyphonic discourse that stretches progressively towards fast *tremolo* alternated with a wide *vibrato*. The piece shapes a mono-tonal sonority due the modified tuning (G–Bb–G–Bb) and the delicate use of harmonic sounds. The tuning and the treatment of the sound create the effect of filtered sound, in this case reducing the spectrum of high partials.

Iannis Xenakis contributed to the solo cello repertoire with two remarkable pieces, *Nomos Alpha* (1966) and *Kottos* (1974). His language was strongly influenced by Schaeffer's *Etude aux objets* using traditional instruments as sound generators giving less significance to the source and origin of the sounds. On the other hand, his experience working with computers enabled him to establish a unique musical style based on mathematical processes (Griffiths 1979: 33). As an architect, Xenakis had a solid sense of space and as a composer his interests also aimed to widely explore the musical space. In the preface of *Nomos Alpha*, he explains the theory of groups of transformation (see Ex. 3.15).

L'oeuvre est dédiée à la mémoire d'Aristoxène de Tarente, de Evariste Galois et de Felix Klein. Elle fut créée a Brême en Mai 1966 par S. Palm.

Signification du titre: *Nomos* règles, lois, mais aussi en musique "melodie spéciale, particulière", et parfois "mode".

Musique symbolique pour violoncelle seul, possède une architecture *hors-temps* fondée sur la théorie des groupes de transformations. Il y est fait usage de la théorie des cribles, théorie qui annexe les congruences modulo z et qui est issue d'une axiomatique de la structure universelle de la musique. Cette oeuvre veut rendre hommage aux impérissables travaux d'Aristoxène de Tarente, musicien, philosophe et mathématicien fondateur de la Théorie de la Musique, d'Evariste Galois, mathématicien fondateur de la Théorie des Groupes et de Felix Klein, son digne successeur. Ecrite pour Siegfried Palm elle fut commandée par Hans Otte de Radio Bremen.

Dedicated to the memory of Aristoxenes of Tarentum, of Evariste Galois and of Felix Klein. First performed at Bremen by S. Palm.

Meaning of the title "Rule, law", but also in music "a special, particular melody" and sometimes "mode".

Symbolic music for solo cello, possessing an *extra-temporal* architecture based on the theory of groups of transformations. In it use is made of the theory of "sieves", a theory which annexes the congruences modulo z and which is the result of an axiomatic theory of the universal structure of music. This work is an act of homage to the imperishable work of Aristoxenes of Tarentum, musician, philosopher and mathematician and founder of the Theory of Music; of Evariste Galois, mathematician and founder of the Theory of Groups, and of Felix Klein, his worthy successor. Written for Siegfried Palm, it was commissioned by Hans Otte of Bremen Radio.

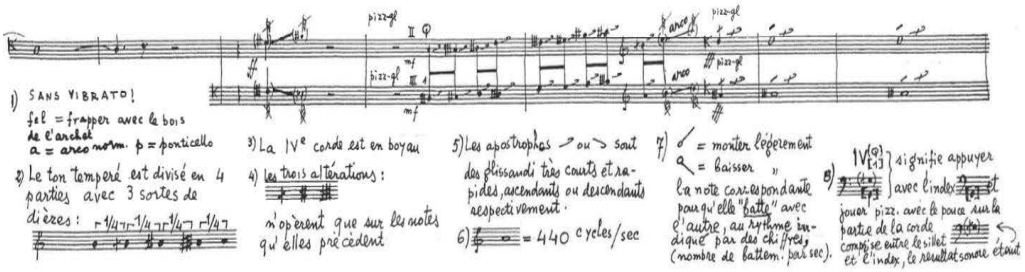
Das Werk ist dem Andenken von Aristoxenes von Tarent, Evariste Galois und Felix Klein gewidmet.

Nomos bedeutet Regeln, Gesetze, in der Anwendung auf Musik auch „besondere Melodie" und manchmal Modus.

Symbolische Musik für Violoncello allein, von ausserzeitlicher Architektonik, die auf der Theorie der Gruppenumformungen basiert. In diesem Stück wurde von der Siebtheorie Gebrauch gemacht, einer Theorie, die die Kongruenzen des modulo z verbindet und die aus einem Axiom der universellen Musikstruktur hervorgegangen ist. Dieses Werk ist eine Huldigung der unsterblichen Arbeiten des Aristoxenes von Tarent, Musiker, Philosoph und mathematischer Begründer der Musiktheorie, von Evariste Galois, mathematischer Begründer der Gruppentheorie, und von Felix Klein, seinem würdigen Nachfolger. Es wurde im Auftrag von Hans Otte vom Bremer Rundfunk für Siegfried Palm geschrieben.

Ex. 3.15. *Nomos Alpha* by Xenakis (1966: Notes).

Xenakis' *Nomos Alpha* requires the non-use of *vibrato*, which evokes the sound of a sine wave. The use of artificial harmonics in the high register produces extremely high frequencies edging to noise. However, the whole piece shows from the beginning a contrasting sequence of sonorities and performance requirements explained throughout a meticulous interpretation guide (see Ex. 3.16).



Ex. 3.16. *Nomos Alpha* by Xenakis (1966: 1).

Helmut Lachenmann breaks traditional orders in acoustic music composition[17] with his piece *Pression* (1969). Connected to Xenakis' idea of the instrument as a sound generator (Griffiths 1979: 33-34), Lachenmann established the concept of *musique concrète instrumentale.* This refers to the importance of the sound process instead of the sound result, which is one of the principals of electronic composition. *Pression* requires the cellist to perform musical gestures rather than only notes and involves the body of the instrument and allows the performer to amplify the cello ad libitum. *Pression* evokes sonorities, gestures, and structures of early electronic works (for instance, Stockhausen's *Electronische Musik*) but achieved with a solo cello (see Ex. 3.17 and 3.18).

Preface

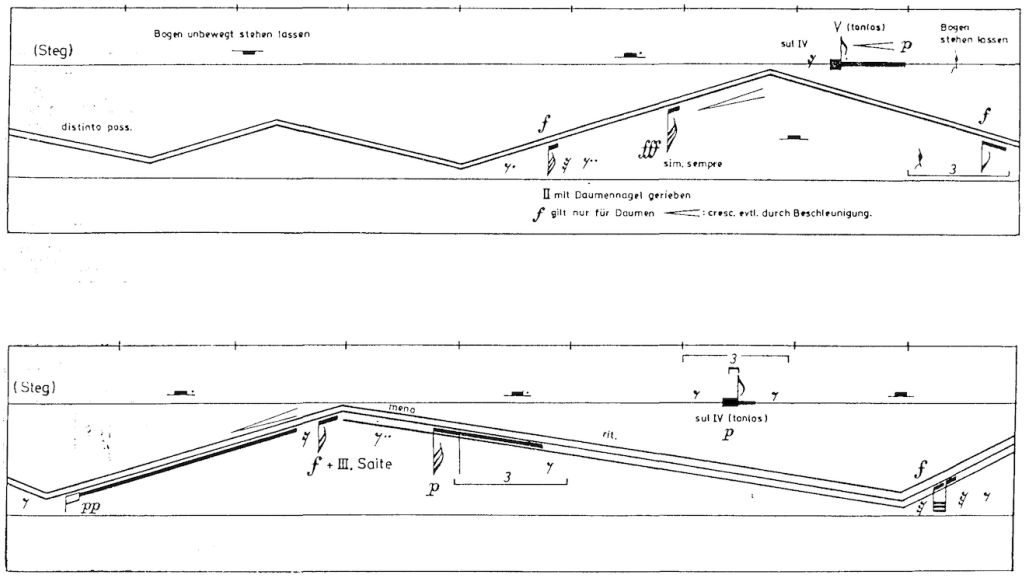
Except for places where pitches are notated in the traditional manner, the notation of this piece does not indicate the sounds, but the player's actions, i. e. at what place on the instrument the right hand (bowing: note-stems point up) and left hand (stems point downwards) should operate. The drawings in the left margin and other indications in the musical text serve as a guide. In the drawings, the upper edge corresponds to the bottom of the body of the instrument; the lower edge of the drawing corresponds to the top of the body.

A division line represents a quarter-note value if not expressly indicated otherwise.

If possible, this piece should be played by heart, or at least in such a way that (a) the pages do not have to be turned, and (b) the score does not block the view of the cello and bow. The cello may be electrically amplified ad lib.

Ex. 3.17. *Pression* by Lachenmann (1969: 1).

[17] This refers to composing for acoustic instruments.



Ex. 3.18. *Pression* by Lachenmann (1969: 2).

There is a long list of pieces that were part of this idea of shifting the paradigm in cello sound from the influence of *musique concrète* and electronic music (Homuth 1994: 1-107). Furthermore, many composers and performers from different latitudes that contributed to the repertoire from the 1960s until today have continued to use new electronic media and communication means as tools for composing instrumental music. For example in Latin America, a territory where some electronic music studios were established essentially at the same time as in Europe, composers displayed in the technical and timbral development of their pieces the influences mentioned above. These include *Trópico de Capricornio* for solo cello (1984) by Guillermo Rendón, *Cuaderno de viaje* (1989) by Mario Lavista, *Hubo pues un antes* (2009) by Juan Ortíz de Zárate, and *Planos Frotados* (2008) by Esteban Agosin Otero.

However, one striking conclusion based on the analyses in this section is that not all composers who explored new directions in cello timbre worked directly with electronic devices or in the studios, but many of them were possibly influenced by those new ideas of making music from purely acoustic phenomena. Furthermore, technological and communication developments enabled musicians from different latitudes to be in contact—via sharing thoughts and works—or via broadcasts of the creations of others. This widened the probability that some of these composers who did not work in studios or with electronic devices were influenced by others who were already exposed to or worked with such media. Namely, there was a common knowledge and awareness of a new paradigm in music creation. Music also began to be thought of as a form of art produced

through sound matter and sound gestures, instead of being only focused on pitch organisation and strict rhythmic development. Thus, the new sonorities also transformed the structures of the pieces and expanded the relation of time and space, hereafter referred to as timespace (Chirstensen 1996: 22). Furthermore, while the solo cello repertoire that included these special timbral characteristics related in one way or another to the advent of electronic media developed rapidly, the emergence of electroacoustic music became in less than two decades an actual musical movement that reached a peak in the production of pieces for electronic devices and any type of instrumental ensemble (Holmes 2002: 331–407).

Significant works for cello and electronic media

The arrival of *musique concrète* and electronic music not only influenced the new approaches in composing and performance techniques for solo cello, but also created a new instrumental unit called cello with tape or electronics. According to Homuth's compilation (1994: 257–274), more than 200 pieces for cello and tape or electronics were composed between 1960 and 1993.

The first pieces show tape and electronics as supporting features beyond the function of an accompanying instrument. In fact, the conception of the first proper pieces for cello and electronics[18] composed in the 1960s is based on the unity of timbres working through imitation, which prevents any kind of hierarchy between both cello and electronics. This is the case of *Synchronisms 3* (1965) for cello and tape by Mario Davidovsky, in which the structure operates in sections where both cello and tape create a dialogue with some timbral likenesses. Davidovsky is known for his series of virtuoso pieces for acoustic instruments and tape and for being a pioneer in using solo instruments and electronics in live performance (Griffiths 1979: 51–52).

Synchronisms 3 starts with a virtuoso solo cello passage that spans extreme pitch changes in a serial style. The tape appears after the first minute, bringing multiple high pitches filtered and spread in space, generating a sort of broken rhythmical pattern. Double stops, *ponticello*, Bartók *pizzicato* and *col legno* are recurrent techniques used throughout the piece. From around the middle and until the end of the piece, both the cello and tape sound materials are constantly blending with each other, creating unique timbres under an articulated conversation.

A-7 (1966) by Hilda Dianda shows a clear conversation between cello and tape, which is based on pre-recorded and processed sources coming from the cello sound materials and techniques used in the piece. Unlike Davidovsky's piece, *A-7* uses strident sounds and noises through extended techniques in the cello, such as rubbing the side of the bridge, hitting the bow against the strings and fingerboard aggressively, *alto sul ponticello* and overpressure, among others. Therefore, the tape material is rough and reveals the strong influence of *musique concrète*. In many passages, the cello is used more as a generator of sounds and noises blending smoothly with the electronics.

[18] Proper pieces for cello and electronics refers to exclusion of the first possible experiments in the studio with cello and electronic testing devices.

Long *glissandi* in both cello and tape are constantly superimposed and interacting in a different register, generating sound-source-blending and speed variations. By the end of the piece, the timbral discourse becomes increasingly strident and noisy, but keeping the idea of imitation leading into a sort of coda, with a sequence of artificial harmonic sounds in the cello in the upper register, finishing the piece with almost inaudible frequencies. Dianda worked with Schaeffer in Paris as part of a group of musical researchers, in Milan at the *Studio di Fonologia Musicale*, and in the Electronic Music Lab at San Fernando Valley California State College, Northridge, in the United States (Compositores e intérpretes: 2004).

From the 1970s onwards, composers and performers developed different styles involving new electronic devices, including analog effects manipulated by pedals, synthesizers, samplers, and software and demonstrated that the media was versatile (Stowell 2000: 144.) However, each composer adjusted the media to a certain aesthetic, although the means were used as one more instrument, highlighting the conception of instruments and electronics as a unique timbral unit.

Time and Motion Study II (1973–76) for singing cellist and electronics by Brian Ferneyhough takes the cello part and vocal sounds through contact microphones and reproduces such sources into delay processes. The piece requires three assistants who control determined directives in real time. Although time and space aspects hierarchise *Time and Motion Study II*, the timbre is a crucial element. The piece develops into different kinds of extended techniques such as bowing and *pizzicato* behind the bridge, *flautando*, scraping sounds, percussion on the fingerboard and the body, and tapping *pizzicato*. Variable distortion procedures are added to the electronic part, creating a chaotic atmosphere where the superimposition of gestures and different timbres interact with each other.

An example of evolution in the repertoire for cello and electronics is found in Jonathan Harvey's work. In his piece *Meditation* (1976) for cello and quadraphonic tape, the composer displays another paradigm in the use of pre-recorded sounds, expanding the perception of the sound space through four loudspeakers. The same format was extended in *Ricercare una melodía* (1985) for cello and quadraphonic tape delay. *Philia's Dream* (1992) for cello and synthesiser consists of an improvisation that connects the gestures of both mediums. The work expands the timbral discourse through revolutionary techniques in cello playing, such as the use of two bows and circular bowing. *Advaya* (1994) for cello, electronic keyboard, and electronics, constitutes the peak of Harvey's cello works. The piece is 22:16 minutes long and displays a detailed timbral blending between the cello and electronics. The form is developed from a refined timbral discourse among the instruments at the beginning, achieving a juxtaposition of sounds that generate exceptional timbral material, in which the source is very difficult to recognise; the sources are perfectly interwoven.

Petals (1988) for cello and electronics by Kaija Saariaho emphasises space and pitch. A reverberation effect manipulated in real time generates different spatial planes throughout the piece. In addition, a harmoniser is used in certain passages (mainly within long gestures) to produce microtonal pitch shifting. Although the cello requires amplification and is processed with those electronic parameters mentioned above, the sound remains organic. One striking feature

included in the piece is the systematic use of noise required from the cello. Saariaho indicates through bow overpressure noise oscillations that blend with the reverb and the harmonisers, generating a stronger mass of sound appearing in different spatial planes. Another special feature is the composer's approach to reverb not only as a spatial effect but also as a form of timbral variation. This is explained already in the technical notes provided by Saariaho in the score:

> If several reverb programs are available a bright reverberation should be selected without any other effects. At the beginning the reverb time should be set to about 2.5 seconds (depending on the hall), and possible filtering and other manipulations made to obtain a clear and bright sound.

Behind the work of the composers was a major contribution by remarkable performers around the world. For instance, collaborations between cellists such as Siegfried Palm, Rohan de Saram, Frances-Marie Uitti, Anssi Karttunen, Peter Schuback, Tanja Orning and Severin Ballon and composers from different latitudes contributed to the creation of outstanding pieces that generated new techniques and new directions in the instrument's timbre. On the other hand, in Latin America the devoted research and performance work of cellists such as Iracema de Andrade, Martín Devoto, and Celso López, among others, has disseminated and generated several pieces for cello and electronic media by Latin American composers from different generations and backgrounds. These include *Mutações II* (1969) by Claudio Santoro, *Le Repaus du Serpent* (2004) by Javier Álvarez, *Tolerance* (2000) by Rodrigo Sigal, *Solipse* (2010) by Ana Lara, *Textura No.1* (2015) by Alfredo Sánchez de la Luz, *El alma mula* (2000) by Jorge Sad, *Ecos espaciales al infinito* (2009) by Rosa Nolly, *Le bruit involontaire* (2009) by Santiago Díaz Fischer, *Heurt* (2010) by Rafael Subía Valdez, *Paisaje Sonoro III* (2016) by Martín Queraltó, *Imposible desaparecer en el océano* (2004-2005) by Cristian Galarce López, *I would prefer not* (2007) by Juan Pablo Avalo, *Aydécq* (2007) by Antonio Carvallo, *Zikkus-V* (2007) by Daniel Osorio, FRROTT(a) (2007) by Sebastián de Larraechea, *El instante oblicuo* (2007) by Andrés Ferrari, and *99,90* (2009) by Esteban Agosín.

From the turn of the 21st century onward, the collaboration between performers and composers became almost compulsory to produce more pieces for cello and electronics. In addition, the processes and goals started became increasingly accomplished by software programing and digital media. Meanwhile, the repertoire continues to grow, crossing the boundaries of tradition and interacting with any kind of new technological development.

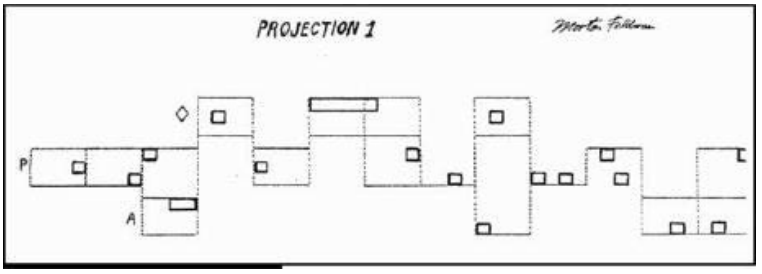
3.2.2. The cello in indeterminacy and experimentalism

While the solo cello repertoire continued to expand in the early 1950s, new ways of exploring timbre emerged along with new forms of composition and notation. For instance, indeterminacy and experimentalism started to establish themselves as musical movements in contraposition to the total serialism and avant garde in Europe, which opened a new horizon to performers and emerging composers in the processes of making music. Furthermore, in the 1960s,

experimentalism began as a strong underground movement in the UK, pioneered by Cornelius Cardew and the AMM group, which were focused mainly in free improvisation. (Sutherland 1994: 206). After its appearance and even today, experimentalism continues to develop and expand worldwide, blending with different music trends such as jazz, rock, and world music, among many others.

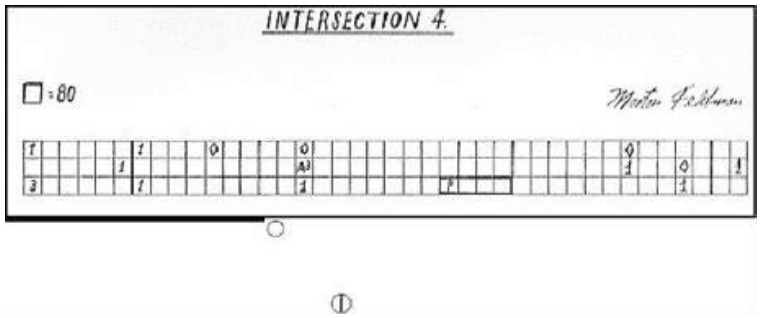
One of the most striking features related to these new music trends was the motivation of generating actions where sounds can appear, instead of the need of controlling and defining all the musical elements (Nyman 1974: 3). Therefore, indeterminate and experimental music presented a very strong connection with graphic notation (Pisaro 2009: 27–28). Strict traditional musical notation is not only against the principles of indeterminists and experimentalists but is also inadequate for achieving certain objectives that the musicians might seek, such as chance procedures and interpretative differences in performances. The understanding of actions and decisions made by the players in chance operations, open scores, and graphic notation—instead of following complex scores that require players to achieve certain interpretations under totally controlled procedures—constitute a breakdown in music playing. Hence, the musician becomes a sort of performing artist. Within the solo cello repertoire, all these breakdowns also generated different perspectives in interpretation and redefined compositional processes. The following examples display some experimental and indeterminist composers' approaches and emphasise music writing style, playing techniques, and timbre.

Projection 1 (1950) by Morton Feldman appears in the solo cello repertoire as a complete graphic score. Feldman specifies three different timbres: *pizzicato*, *arco*, and harmonic sounds. The *pizzicato* should be played within the middle register, the *arco* within the low register, and the harmonic sounds in the high register. This piece shows timbre more controlled than pitch and rhythm. Pitches are indicated in boxes, which give an estimated idea of a rhythm in four beats, and must be chosen by the player during the performance (see Ex. 3.19).



Ex. 3.19. *Projection 1* by Feldman (1950: 2).

In 1953, Feldman composed *Intersection 4*. This work for solo cello maintained the idea of three gridded rows, which indicate low, middle, and high registers. Feldman again created three planes. However, unlike *Projection 1*, these planes can also interact simultaneously. In this case, the numbers in the boxes specify the number of sounds that the performer should play. Although timbre continues to operate as the most controlled element, the piece explores a large variety of timbres, combining sound layers where playing techniques and articulations operate simultaneously. These two pieces constitute a clear example of timbral polyphony in the solo cello repertoire (see Ex. 3.20).



Ex. 3.20. *Intersection 4* by Feldman (1953: 2).

The contribution of John Cage to the solo cello repertoire includes his *26'1.1499" for a string player*[19] (1953–55) and the *Etudes Boreales* (1978). Cage, who is considered one of the most important icons of experimental music, explored different types of notation and changed the concept of writing music itself. He encouraged performers to shift paradigms of interpretation, including performances with traditional classical instruments combined with sound objects and putting the performer into an awareness of theatrical dimensions (Sutherland 1994: 134). In addition, Cage explored in his works extramusical elements such as Zen Buddhism and Happenings (Sutherland 1994: 111).

26'1.1499" for a string player is a graphic score to be played on any four-stringed instrument or any combination thereof. Through graphics and words, Cage indicates *vibrato*, bow positions, bow techniques, timbral modulations, tuning modifications, *glissandi*, harmonics, articulations, triple and quadruple stops, and four types of *pizzicato*. All these suggestions generate a timbral richness within the piece produced by the instrument itself and the performer; however, Cage allows the

[19] Although this piece was originally written for a string player, I included it within the experimental cello repertoire as several iconic contemporary cellists such Charlotte Moorman and Frances Marie Uitti, among others, have performed, broadcasted, and recorded it recurrently.

use of other sound sources to produce noises, such as radios and percussion instruments. These timbral combinations permit the creation of a sort of electroacoustic soundscape. Although in this piece most of the indications are delimitated by the composer, the indeterminate character remains with the performer, who can make decisions when indications are not given. Time is indicated with spatial notation in measured time (see Ex. 3.21).

The rhythmic structure. 3;7;2;5;11. is that of 34' 46.776" for a pianist and for the other part already written for a pianist. All of these pieces may be played alone or in combination, and in whole or in part, the title to be appropriately changed to indicate time in minutes and seconds and the instrumentalists involved. The present part may be played on any 4-stringed instrument or(using parts indicated by dotted lines) any combination of 2 or more.

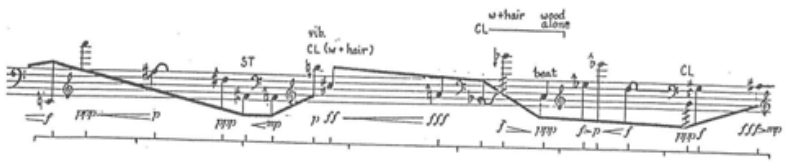
The notation is in space, the amount equalling a second given at the top of the page. Vibrato is notated graphically. ⊓ or V are the conventional symbols for bowing. H indicates hair of bow, W, col legno. B indicates bridge (extreme ponticello); BN is closer to bridge than normal; NB is closer to normal than bridge, etc., F indicating extreme sul tasto. Below these notations is an area where bowing pressure is indicated graphically, the top being least, the bottom most pressure (i.e. pianissimo, fortissimo). The 4 strings (e.g. violin EADG) are the lower large areas, the points of stopping these being indicated. These strings are in a continual state of changing "tune" indicated by the words, decrease and increase, i.e. tension. Glides are indicated by angles and curves, harmonics by 3 lines connected vertically by dots. Vertical lines connecting two separate events indicate legato. 4 pizzicatti are distinguished: ., the normal; † , stopped against fingerboard; x against fingernail; ↺ slide following pluck. A dotted horizontal line indicates saltando. Manner of breaking triple and quadruple stops is indicated by arrows. If no indication is given, the player is free to break as he chooses. The lowest area is devoted to noises on the box, sounds other than those produced on the strings. These may issue from entirely other sources, e.g. percussio instruments, whistles, radios, etc. Only high and low are indicated.

The 5 pieces (pg. 34 through 58) were written in 1953 in NYC and are variously dedicated. The time was originally indicated in terms of ritardandi and accelerandi, metronome values given at structural points. Vertical lines accompanied by the actual seconds have been added (1955). The triple stop at the end of pg. 33 is the triple stop at the beginning of pg. 34. The other pages were written at Stony Point, N.Y., August-September 1955 with assistance from David Tudor which is gratefully acknowledged. The whole constitutes a fragment of an unfinished work for many activities and may be performed with any of those to be written or otherwise calculated.

Ex. 3.21. *26'1.1499"* by Cage (1953–55: C)

The *Etudes Boreales* are conceived for solo cello, solo piano, or cello and piano. Cage thus provides the possibility to play the piece in three different instrumental formats. However, this is perhaps the only connection that the piece has with indeterminism, since at the time Cage's interests aimed at different approaches, using for example more conventional ways of making music. According to Sutherland (1994: 134), "Cage himself retreated quietly into the backwater of chance determinism. Virtually none of Cage's recent work is indeterminate to the point of abolishing fixed structural identities." For instance, *Etudes Boreales* displays total control in terms of articulation, pitch, *vibrato*, dynamic, rhythm, and timbre. These parameters make the piece

extremely difficult to play. The three pieces present a melodic conduction and shifts among cello register similar to integral serialism; however, the compositional processes are far from any rigid system. For instance, the work is developed in an extreme sequence of change of timbral events and articulations, which give the piece an enormous richness in sounds. Thus, the piece clearly displays a polytimbral development. For example, the three pieces present diatonic movements in a very high register (beyond the fingerboard) and in some passages require a systematic use of the *col legno* (wood alone, wood and hair), operating simultaneously with *vibrato* in the *sul tasto* position within the high register of the cello (see Ex. 3.22).



Ex. 3.22. *Etudes Boreales* (II) by Cage (1978: 5).

Other composers of experimental music have also written solo cello pieces. Among them are *Cellogram (1971)* by James Tenney, *Cello Song Variations ('Hallelujah, I'm a bum')* (1978), *Cello Suite Variation* (2000) by Christian Wolff, *Three Pieces for Sergio Castrillón* (2014) by Hara Alonso, and *Metamorphosis* (2016) by Daniel Möllås.

The relationship with visual arts and performance

During the second half of the 20th century, experimental composers increasingly worked with and were influenced by visual artists, dancers, and performers. For instance, Feldman was strongly connected to the painters Mark Rothko and Jackson Pollock (Sutherland 1994: 141) and Cage worked intensively with dancer Merce Cunningham. Furthermore, collaborations between different artistic expressions increased, generating several multidisciplinary works. For example, Cage and Tenney were part of *Fluxus,* a group of composers, performers and artists, such as Nam June Paik, Toshi Ichiyanagi, Yoko Ono, Meredith Monk, and Charlotte Moorman, who worked together in different types of performances in the United States and Europe during the 1960s and 1970s (Rothfuss 2014: 88).

The freedom and liberation that visual and performing arts conveyed to some musicians encouraged instrumentalists and composers to seek other paths for developing musical skills and showed them other possibilities for making art (Rogers 2013: 11–45). For instance, cellist Charlotte Moorman, who was member of the American Symphony Orchestra (Rogers 2013: 174), started a devoted career as experimental performer and ended up being a controversial figure within the art scene in New York. According to Piekut (2011: 140)

> Moorman had been living in New York since 1957, and by 1964 she had emerged as a catalytic force in New York experimentalism, owing to her considerable prowess in organizing and promoting large events […]. Over the next fifteen years she produced fifteen more Avant Garde Festivals at a number of unorthodox locations throughout the city […]

Another example is Nam June Paik, who was a classical pianist and composer and already showed in the 1960s his significant interest in combining performance, visual arts, and music. Paik moved to New York after a period in Germany, where he developed an active artistic career. There, he participated in the avant-garde music festival in Darmstadt and collaborated with Karlheinz Stockhausen (Rothfuss 2014: 84) and with the artists Joseph Beuys and Wolf Vostell.[20]

In 1964 Moorman and Paik met in New York and started a collaborative work. Moorman used Paik's work called *TV Cello* (1971) in several performances during her performing career (Rogers 2013: 174–177.) *TV Cello* is an apparatus made from three different-sized televisions superimposed one by another, imitating a cello shape, with the widest located at the bottom, the smallest in the middle, and the mid-sized television on the top. It has a fingerboard and two bridges, one located on the widest television and the other on the smallest one. While Moorman played the *TV Cello,* different images were projected on the televisions: an image of the actual performance (see Fig. 3.1.).

Fig. 3.1. Charlotte Mooman playing Paik's TV cello. (Source: Moorman's Facebook page[21])

[20] Beuys and Vostell were German visual artists members of the *Fluxus* movement.

[21] (https://www.facebook.com/CharlotteMoormanCello/photos/a.477956582217446.114305.477955842217520/1040085069337925/?type=3&theater) (accessed 6 May 2018).

Variations on a theme by Saint-Saens is a performance in which an excerpt from the piece *The Swan* is played by Moorman and Paik on cello and piano, respectively. After an interruption, Moorman leaves the cello on the floor and goes to climb a staircase that takes her to a barrel of water in which she has to dip. After that, she climbs down the staircase, and dripping water, returns to play the cello, continuing with the performance of *The Swan* until the end. A film by Vin Grabill (1982) shows a version of this performance where Moorman's cello is covered by layers of plastic and also that the central act of the performance is not the music itself. The film also shows how Moorman plays a version of the cello part of *The Swan*, in which the original rhythmic suggestions—clearly noted in the score and stylistic matters of Saint-Saëns music—are not followed rigorously.

Another collaboration between Moorman and Paik is *Sonata for Adults Only*. In the film *Charlotte Moorman and the New York Avant Garde* by Fred Stern (1980), Moorman describes the works as a striptease piece that consists of her playing a Bach piece interrupted by a pause, in which she should take off a piece of clothing until ending up laying down naked with the cello on top.

Opera Sextronique is a legendary performance by Paik, which gave the nickname of "Topless cellist" to Moorman. According to the description of the piece in the catalogue of the Electronic Arts Intermix (Electronic Arts Intermix n.d.)

> Moorman would perform with panties, topless, bottomless, and nude. The first movement was performed in the dark with Moorman wearing a blinking light bikini bra while playing Massenet's *Elegy*. The second movement of *International Lullaby* by Max Matthews was performed topless, wearing only a black skirt, and was to involve Ms. Moorman wearing various masks and bowing the cello with various objects, including a bouquet of flowers. This second movement was interrupted by her arrest by three plainclothes police officers, and the remainder of the concert went unperformed.

The performance also included a collaboration between Jud Yalkut and Paik, as well as pieces by Takehisa Kosugi and James Tenny (see Fig. 3.2.).

Fig. 3.2. Poster of the premier of *"Opera sexotronique"* (Source: unknown)

The influence of visual and performing arts in music constituted a new path in creative methods for composers and presented a new means of expression for the instrumentalists. Furthermore, these subjects opened doors to upcoming musical trends. For instance, some of Cage's and most of Paik's works are referential points towards what was called *sound art* and *video-art music* (Rogers 2013: 11–45).

Morover, Latin American composers, visual artists, and cellists started to consolidate within the repertoire a new ensemble: cello, electronics, and video. Accordgingly, several pieces for this ensemble started to emerge during the 20st century in México and Colombia. Some of these pieces are *Ashtanga* (2012) by Matías Uribe, *María* (2012) by Hector Fabio Torres, *LUCID* (2016) by Aldo Lombera, *Kôra* (2016) by Alfredo Sánchez de la Luz, *Altamisa* (2016) by Emilio Ocelotl, *OOBE* (2016) by Ricardo Durán Barney, and *Rabieta* (2016) by Alejandro Reyes. Within these pieces it is important to note the work of composers and cellists Iracema de Andrade, Matías Uribe, Gisela Paterno, and Camilo Benavides and of the visual artists Jessica Rodríguez and Silvia Pérez Carvajal. In Argentinian composers, the influence of theater also was introduced to the cello repertoire. Two examples are *Siegfriedp'* (1971) by Mauricio Kagel and *Rellenos de la Inaprehencible Mostración* (2010) by Juan Manuel Cerono, where the performers are required to recite texts, produce vocal sounds, and even change physical positions on the stage.

On the other hand, from Moorman until the present, cellists have continued to expand their careers to such an extent that playing in a symphony orchestra and interpreting classical music are not the only possibilities for developing their professions. In fact, cellists continue to emerge from diverse branches of performance, such as stand-up and comedy shows. This is the case of British cellists Zoë Martlew, Rebecca Carrington, and Kate Shortt, among others. In addition, according to Homuth (1994: 363–365), several pieces for cello and performance artists such as dancers,

storytellers, actors, and narrators appeared in the cello repertoire. That demonstrates a strong symbiotic relationship among interdisciplinary artists from the second half of the 20th century until today.

3.2.3. Noise: A striking element in the new solo cello repertoire

Considering that every musical instrument produces noises and musical sounds, the cello is not only a musical instrument; it also is a generator of noises. Its special features such as its size, width, range, body, and all its removable parts provide a large range of noises (see Fig. 3.3.).

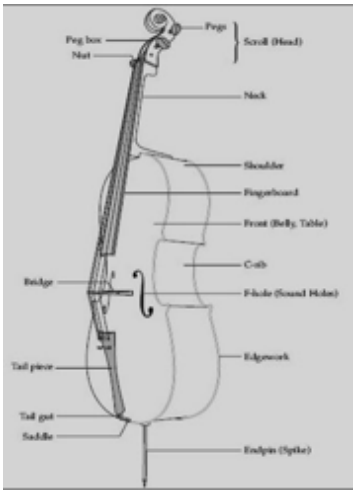


Fig. 3.3. Cello parts. (Source: http://users.metu.edu.tr/e164897/parts.html) (accessed 7 July 2014).

The strings have been the most used parts of the cello since its appearance, as through the strings it is possible to achieve more easily defined pitches that lack noise (i.e. sounds considered by Western musical tradition as proper musical sounds). However, the strings also produce an infinite range of noises. It is important to consider that traditional cello technique aims to reduce as much as possible the content of noise when playing (see 1). Nevertheless, the use of extended playing techniques and its approval in academic music during the 20th century allowed both composers and performers to include noise elements in their music. Extended playing techniques allowed them to achieve certain noises in the instrument that were not possible to accomplish through traditional techniques (see 1). The following table presents some examples of techniques and their combination with the different cello parts and dynamic ranges resulting in noises.

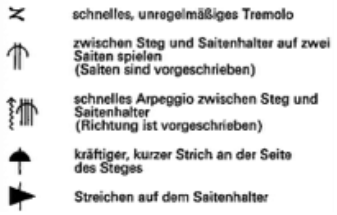
Technique	Part	Dynamic range
Bow rubbing	Head, neck, shoulder, rib, edgework, bridge, tailpiece, tail gut, saddle, endpin	*pp* to *f f*or louder
Bow overpressure	Head, neck, muted strings, open and muted strings behind the bridge, shoulder, rib, edgework, bridge, tailpiece, tail gut, saddle, endpin	*pp* to *ff* or louder
Col legno (rubbing and hitting)	Head, neck, shoulder, rib, finger board, edgework, bridge, tailpiece, tail gut, saddle, endpin	*pp* to *ff* or louder
Hand hitting and tapping	Head, neck, shoulder, rib, edgework, bridge, finger board, tailpiece, tail gut, saddle, endpin	*pp* to *ff* or louder

Table 2. Combinations of techniques, parts, and dynamics resulting in noises (Source: author).

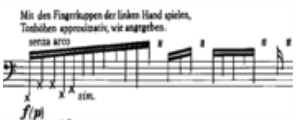
Among these combinations, it is also possible to accomplish sounds in which regular and irregular vibrations constantly fluctuate. Therefore, the result is a musical sound with noise. These characteristics have brought important contributions to the timbre, generating other timbres in the same instrument (see 2). For example, overpressure on open strings can easily generate overtones with a high content of noise; multiphonics and broken sounds, for instance, suggest a noise atmosphere. In addition, rubbing the bow on the bottom of the tailpiece and in the middle of the endpin can produce exact pitches with a high content of noise and generate sounds that can be easily referenced with wind instruments. Furthermore, hand hitting and even traditional *pizzicato* behind the bridge can produce sounds similar to idiophone percussion instruments (see 2.3.).

Within the solo cello repertoire, there are relevant pieces that consciously include noise elements. For instance, in 1968 Krzysztof Penderecki composed the piece *Capriccio per Siegfried Palm* for solo cello. The piece shows two contrasting sonic planes. The first, which involves noise elements, is developed by tapping the fingerboard, hand hitting on the body, perpendicular bow rubbing on the bridge, *pizzicato* behind the bridge, *col legno battuto*, and bow rubbing on the tailpiece. These gestures are represented in the score through graphic notation and indeterminate pitches. The second, which consists of traditional tonic sounds involves fixed pitches and uses almost the whole cello range. However, some of the passages require very fast *tremolo* in the low register, which

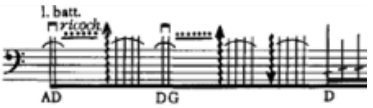
generates a mass of noisy sound. This gesture is more prominent than the pitch sequence itself. The piece is written in a combination of graphic and traditional notation (see Ex. 3.23–3.26).



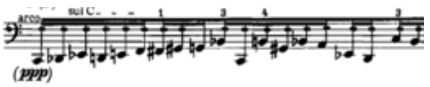
Ex. 3.23. *Capriccio per Siegfried Palm* by Penderecki (1968: 5).



Ex. 3.24. *Capriccio* by Penderecki (1968: 2).



Ex. 3.25. *Capriccio* by Penderecki (1968: 2).

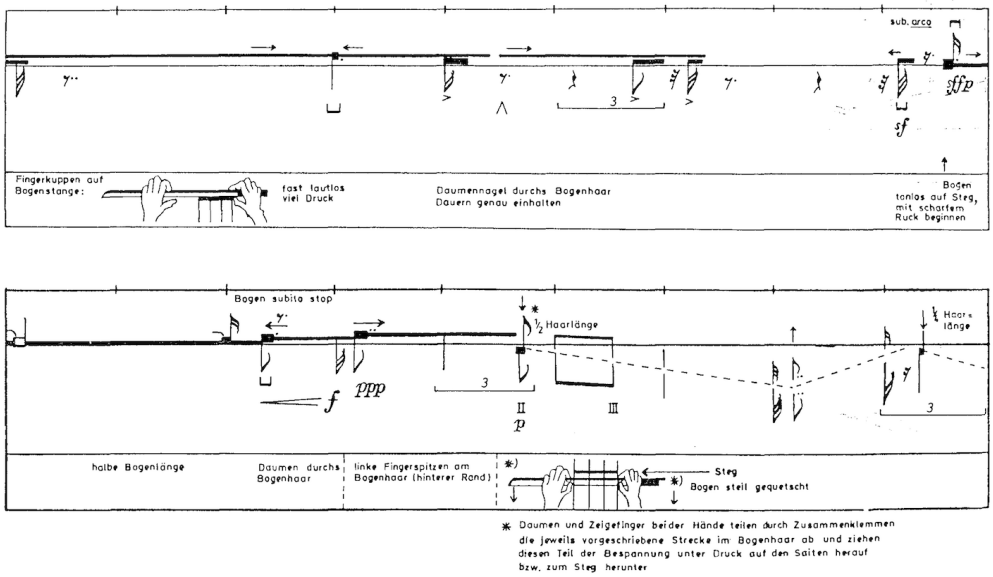


Ex. 3.26. *Capriccio* by Penderecki (1968: 2).

The techniques used by Penderecki in some of his bowed string works clearly show an interest in using noise. In a description about the piece *Threnody for the victims of Hiroshima*, Sutherland (1994: 29) says: "For example, bowing between the bridge and the tailpiece, regardless of which notes are played, will produce a very pale and ethereal sound impression, reminiscent of "white noise" filtered down to reveal only the upper partials."

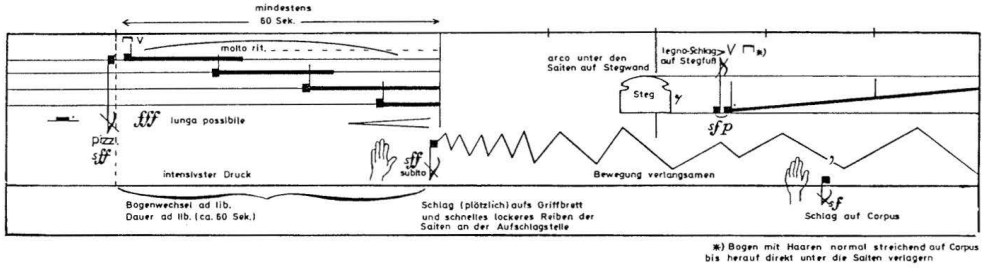
Pression (1969) for one cellist by Helmut Lachenmann is another example where noise is a striking element. Unlike Penderecki's piece, Lachenmann uses undefined pitches throughout the entire piece. For instance, there is only one short passage were the cellist must play two notes in unison, one on an open string and the other one pressed. Most of the techniques required in this piece generate noises. The piece opens with bow rubbing on the bridge during a sequence of *glissandi*. The result is a kind of white noise where pitches, that can barely be heard, oscillate up and down. Furthermore, the piece requires special bow techniques that were not used previously in solo cello repertoire and that generate pure noise instead of tone. For instance, the cellist has to hold the bow with the right hand on the bridge while with the left hand should rub the wood of the

bow, creating a kind of amplified noise, and then the cellist must drag the bow vertically on the strings, creating a sort of granular loud noise (see Ex. 3.27)



Ex. 3.27. *Pression* by Lachenmann (1969: 3).

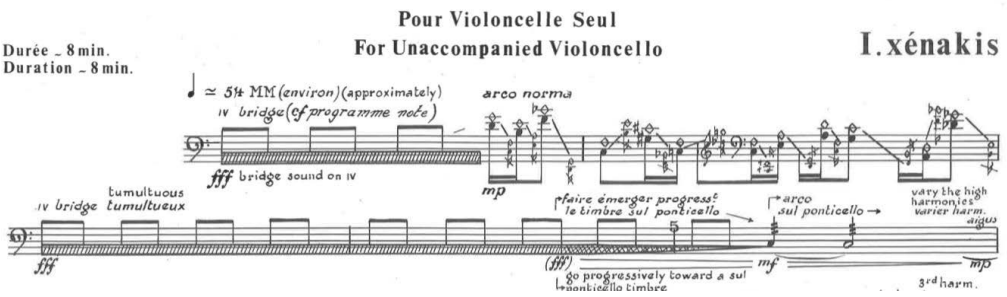
The piece also demands gestures using the body of the instrument, which produces scratchy sound noises. In the first part of the piece the cellist has to rub with the hand the frontal box of the body starting with a slow movement that increases to a fast one (see Ex. 3.28).



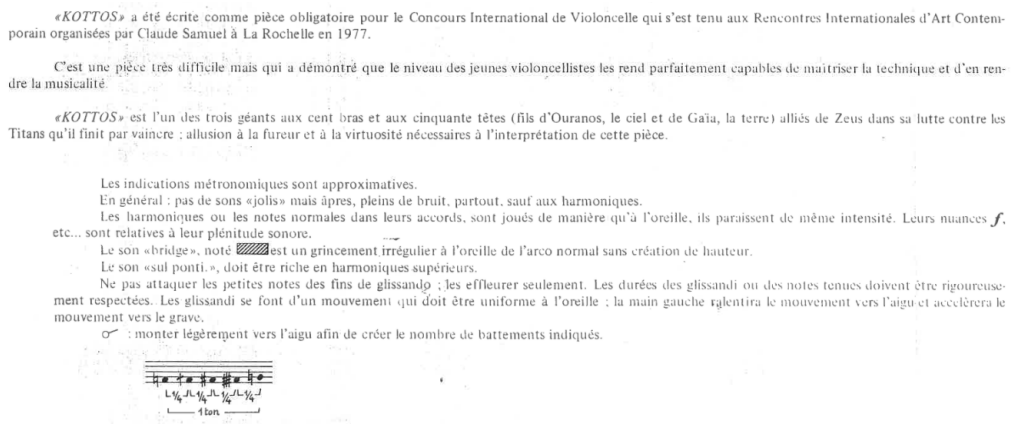
Ex. 3.28. *Pression* by Lachenmann (1969: 4).

Kottos (1974) for solo cello by Iannis Xenakis opens with a loud noise passage that is presented throughout the piece in short fragments. In addition, fast sequences of artificial harmonics

represent noise textures instead of clear fixed pitches. However, superimposition of natural harmonics breaks the noisy atmosphere created in the beginning and makes the piece alternate between noise and pure tonic sounds. Xenakis makes a clear difference in the indications between beautiful and rough sounds with noise and specifies how these must be played. The noise also represents an extramusical element related to Greek mythology. According to Uitti (2000: 219), "It is one of the most dramatic openings imaginable, invoking the 'terror of the gods'" (see Ex. 3.29 and 3.30).



Ex. 3.29. *Kottos* by Xenakis (1974: 1).


«KOTTOS» a été écrite comme pièce obligatoire pour le Concours International de Violoncelle qui s'est tenu aux Rencontres Internationales d'Art Contemporain organisées par Claude Samuel à La Rochelle en 1977.

C'est une pièce très difficile mais qui a démontré que le niveau des jeunes violoncellistes les rend parfaitement capables de maîtriser la technique et d'en rendre la musicalité.

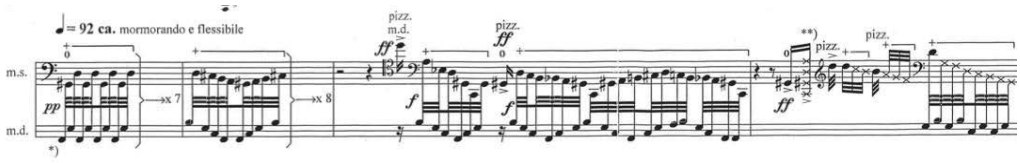
«KOTTOS» est l'un des trois géants aux cent bras et aux cinquante têtes (fils d'Ouranos, le ciel et de Gaïa, la terre) alliés de Zeus dans sa lutte contre les Titans qu'il finit par vaincre ; allusion à la fureur et à la virtuosité nécessaires à l'interprétation de cette pièce.

Les indications métronomiques sont approximatives.
En général : pas de sons «jolis» mais âpres, pleins de bruit, partout, sauf aux harmoniques.
Les harmoniques ou les notes normales dans leurs accords, sont joués de manière qu'à l'oreille, ils paraissent de même intensité. Leurs nuances *f*, etc... sont relatives à leur plénitude sonore.
Le son «bridge», noté ▨ est un grincement irrégulier à l'oreille de l'arco normal sans création de hauteur.
Le son «sul ponti.», doit être riche en harmoniques supérieurs.
Ne pas attaquer les petites notes des fins de glissando ; les effleurer seulement. Les durées des glissandi ou des notes tenues doivent être rigoureusement respectées. Les glissandi se font d'un mouvement qui doit être uniforme à l'oreille ; la main gauche ralentira le mouvement vers l'aigu et accélèrera le mouvement vers le grave.
: monter légèrement vers l'aigu afin de créer le nombre de battements indiqués.

Ex. 3.30. *Kottos* by Xenakis (1974: 5).

Sequenza XIV (2002) *per violoncello* by Luciano Berio is another example of how noise is present in the musical discourse. The piece begins with rhythmic patterns in both body and

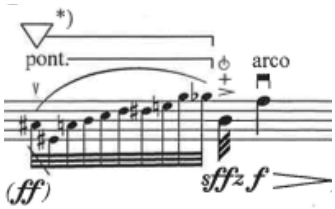
fingerboard at the same time. The left hand on the fingerboard taps a pitched ostinato, while the right hand taps the front table with the same rhythmic structure. Suddenly, aggressive *pizzicati* and hand hits on the fingerboard appear, generating a polyphonic passage formed by fixed and indeterminate pitches into different timbres, which creates a fascinating melodic passage made by combining noises and pitches that work as a *Leitmotiv* throughout the whole piece (see Ex. 3.31).



*) the dynamic of the right hand is always the same as the left hand
**) strike the fingerboard with the palm of the right hand

Ex. 3.31. *Sequenza XIV* by Berio (2002: 1).

Furthermore, later during the piece, bow overpressure close to the bridge isolates almost completely the pitches and turn them into pure noise (see Ex. 3.32).



*) slow the bowing and press hard on the string to produce noise

Ex. 3.32. *Sequenza XIV* by Berio (2002: 2).

Moreover, in *Sequenza XIV* the composer indicates in the performance instructions how the player must experiment to achieve certain timbres in the instrument and explains the sonic references used (see Ex. 3.33).

Performance instructions

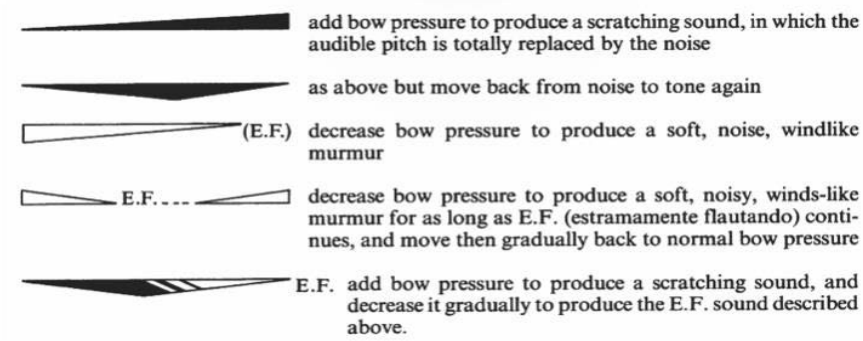
The instrument must be tuned in the following way: 

It should be noted that it is clearly indicated in the score which G♯'s must be played as an open string. All other G♯'s may be fingered according to their context. No attempt has been made to transpose any part of the score. The written pitches are those which are to be heard, and therefore the player must find a suitable fingering wherever the third (G) string is employed.

Where the music is notated on two staves the player is to produce a percussive sound which follows the contours and rhythms of the lower stave, played by four fingers of the right hand on the body of the instrument. The best area – somewhere on the belly – will be determined by experimenting where it is possible to produce four differentiated sounds (derived from ceremonial Kandyan drumming from Sri Lanka) which range from high to low. During these sections the upper stave notates the simultaneous left hand finger percussion.

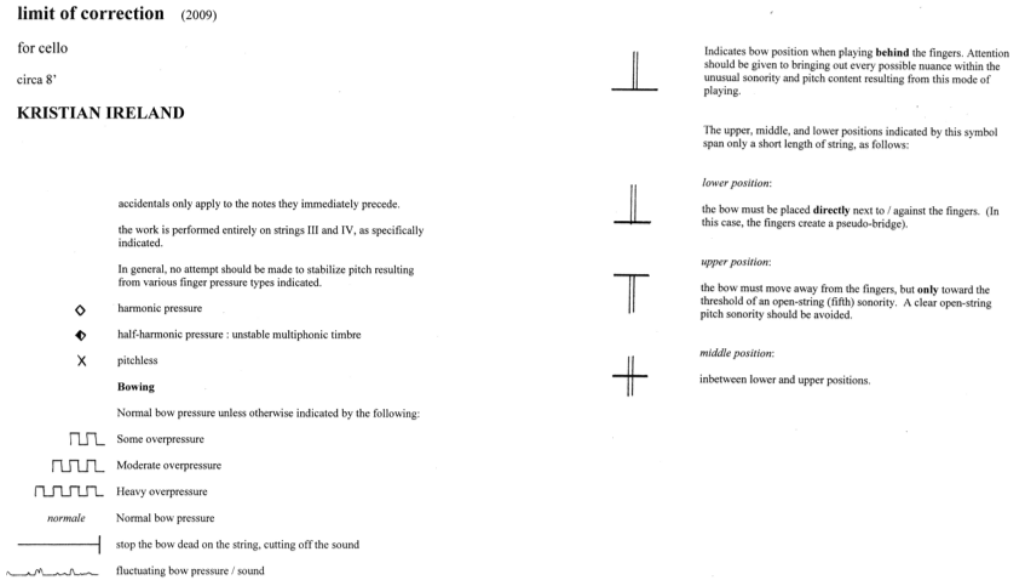
Ex. 3.33. *Sequenza XIV* by Berio (2002: performance instructions).

Petals (1988) for cello and electronics by Kaija Saariaho literally suggests a systematic use of noise throughout the whole piece, where different bow pressures intend to accomplish certain noise and tone ranges (see Ex. 3.34).



Ex. 3.34. *Petals* by Saariaho (1988: 2).

In the piece Limit of correction (2009) for solo cello by Australian composer Kristian Ireland, noise passages result by combining unique techniques such as bowing behind the fingers or beyond the bridge (in three different positions), various types of bow overpressures, bow positions, and specific harmonic sounds; these techniques deconstruct the idea of cello sound, introducing rather a sonic characteristic of a didgeridoo (see Ex. 3.35).



Ex. 3.35. *Limit of correction* by Ireland (2009: Instructions).

The use of noise in some Latin American pieces for solo cello was in some cases related to the presence of noise within indigenous music and rituals and to the idea of using the cello as a sort of noise/sound generator/object instead of as a pure musical instrument.[22] Among them are *Puneña # 2* (1976) by Alberto Ginastera, *yuunohui'yei* (1983) by Julio Estrada, *Llorando silencios (seis canciones quechuas)* (1988) by Alejandro Iglesias Rossi, *Ondulaciones del ahora* (2007) by Marcelo Toledo, *E-NUCLEO VITA AETERNUS* (2011) by Walter Barrera, and *Líneas y puntos sobre aguas oscuras* (2008-2013) by Marcos Franciosi.

3.2.4. The cello in improvised experimental music

Since these last sections of chapter three are focused more on the work of the performers and their influence in the development of the cello within more popular music genres, the analysis tools are based mainly on listening to the recordings and the discrimination of playing techniques used by the cellists.

The arrival of improvised experimental music led to breakdowns in compositional processes, such as graphic notation (Sutherland 1994: 206–210), and created new paths in playing techniques

[22] I will discuss these matters in detail in an upcoming article.

and the use of the musical instruments, such as preparations and modifications[23]. Furthermore, timbral innovations, discovered through new techniques (see 1), reached a peak in establishing new sonic references. For instance, the use of noise and the popularity of electronic music increased, which brought along more sonic discoveries (Keep 2009: 113–115).

In addition, the consolidation of the concept of extended playing techniques into academic music tendencies, combined with experimentalism, the use of electronic devices, and free improvisation expanded the sound palette in acoustic instruments (Ibid). All these factors gave birth to not only to a new way of music creation but also to a massive alternative artistic movement in contraposition of structures established during the first half of the 20th century (Bryans 2009: xiv–xv), which spread quickly worldwide.

Some of the performer-composers that used cello—mainly as a sound source since none of them were professional cellists—in improvised experimental music in the 1960s were the British musicians Keith Rowe, Lawrence Sheaff, and Cornelius Cardew. Rowe was one of the founders of the AMM, which was a London-based ensemble focused on playing improvised music (Sutherland 1994: 206). Rowe was a jazz musician and used mainly amplified cello; the guitar was however his main instrument. Sheaff was a jazz musician as well and in addition to cello he played accordion and clarinet. On the other hand, Cardew was a classically trained pianist and experimental composer with an interest in graphic notation and aleatoric music (Sutherland 1994: 206, 208).

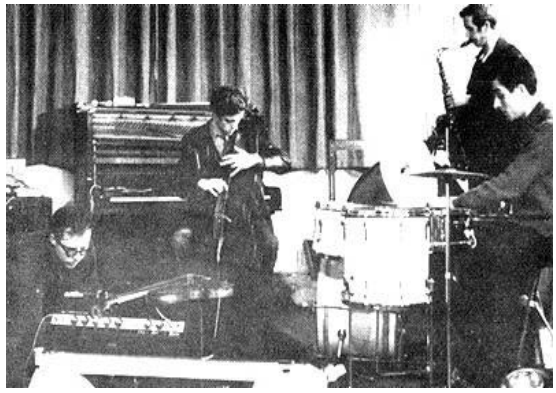


Fig. 3.3. AMM. (Source: http://www.ondarock.it/altrisuoni/amm.htm) (accessed 15 July 2015).

[23] This refers to preparations and alterations in conventional techniques and construction of instruments, for instance Cage's *Prepared Piano.*

By the early 1960s, a group of Italy-based musicians called *Gruppo Nuova Consonanza* also included the cello in its lineup. The cello was played by John Heinemann, who was primarily the trombonist of the ensemble. According to Sutherland (1994: 209)

> Gruppo Nuova Consonanza, founded in Rome in 1964, included composers whose declared aim was to fuse composition and performance in one simultaneous creative act. The group comprised Franco Evangelisti (piano), Mario Bertoncini and Eduardo Macchi (percussion), J. Heinemann (trombone, cello), Walter Branchi (double bass) and Ennio Morricone (trumpet).

Fig. 3.4. Gruppo Nuova Consonanza. (Source: http://tonyface.blogspot.com/2016/04/gruppo-di-improvvisazione-nuova.html) (accessed 15 July 2015).

Unlike AMM, which was formed mainly by jazz musicians, in the *Gruppo Nuova Consonanza* most of the musicians had a classical background and had worked with electronic music, graphic notation, and film music (Sutherland 1994: 210). Therefore, even if both lineups involved performer-composers working through improvised experimental music, the performance and sonic results were completely different. According to different recordings and videos of both groups made in the 1960s, diverse striking features in their music are revealed.[24] For instance, AMM explored a constant high dynamic range and raw sounds through an energetic way of performing, whereas *Gruppo Nuova Consonanza* used mainly a controlled-limited dynamic range—with some exceptions during climatic moments—and compared to AMM, had a passive manner of performing. This leads us to an important reflection: two ensembles with different backgrounds operating under the same practice—improvisation—generate a sonic and even performance result strongly connected to their own backgrounds. Namely, although the nonexistence of formal systems or limitations that Cardew says about AMM's music (Cardew 1971), the sound result

[24] See references.

suggests the hierarchy of jazz in the group. On the other hand, *Gruppo Nuova Consonanza's* music clearly recalls post-serial music. However, there was a convergent point between them; there was an interest in searching for sounds or just a particular interest in sound rather than form, pitch, or structure. According to Cardew (1971)

> Informal 'sound' has a power over our emotional responses that formal 'music' does not, in that it acts subliminally rather than on a cultural level. This is a possible definition of the area in which AMM is experimental. We are searching for sounds and for the responses that attach to them, rather than thinking them up, preparing them and producing them. The search is conducted in the medium of sound and the musician himself is at the heart of the experiment.

On the other hand, a search for a collective timbral development is clearly heard in *Gruppo Nuova Consonanza's* music. According to Sutherland (1994: 211)

> One of the tracks on their DGG album - *Light Music* - contains hardly any sounds of recognisably instrumental origin; although the instruments are double bass, trombone, piano, etc, the sounds one hears are more reminiscent of a chorus of insectile scratchings and murmurings, endlessly varied and seeming to emanate from a multiplicity of sources.

Although Rowe, Sheaff, Cardew, and Heinmann used the cello as a secondary instrument and their practice in improvised music did not emphasise a soloist role with the medium, the timbral developments discovered within their ensembles not only started to influence the cello repertoire but also questioned the performer's role within improvised music (see 4 and 5). It also contributed to one of the most striking features of improvised experimental music during its early years, which was the search for a collective sound colour that could be produced by combining all the available timbres, instead of giving space to solos that could highlight an specific sound source or timbre (Sutherland 1994: 208).

Improvised experimental music also brought two important concepts to the music of the 20th century. The first was the mixture of music styles and the second was the redefinition of the instruments' sound. For instance, AMM demonstrated how different musical tendencies converged generating a unique type of music. On the other hand, through the use of sound objects music instruments began to be used also as sound generators, which gave another perspective in their sonic characteristics. Furthermore, these two factors also started to change the mindset of traditional performers and composers from the 1960s onwards. According to Keep (2009: 113)

> Within improvised experimental music the need to define a musical instrument can be superseded by acts of bespoke, and often temporary, uses of any sounding object. The performer's perspective of a musical instrument is also effectively changed from the traditional role of being a predetermined *thing* that realizes a musical language outside or indifferent to its self, to being an *act* that explores an object for its inherent sonic properties.

This performer's perspective described by Keep also generated curiosity and needs among soloists in improvised music, leading to improvements and revolutionary developments in techniques. These include the two-bow system developed by cellist Frances-Marie Uitti and several examples of modified cello used by Alfred Zimmelin and Ernst Reijseger, among others.

After the presentation of the cello as part of the sound palette of AMM and the *Gruppo Nuova Consonanza,* the medium started to take a more important role in improvised music, becoming very popular among bowed string instruments. Furthermore, classical and avant-garde cellists began to get involved more in improvised experimental music. For instance, during the 1980s a member of the Arditti string quartet, Rohan de Saram, joined the AMM ensemble. In an interview Rohan de Saram (see Scott 1989) explains his experience with AMM and within improvised music.

> When I am doing improvisation with AMM it really is a form of composition because to be successful the parts have got to have a meaningful relation, the whole has got to have a certain sense of direction, even in so-called free improvisation. In AMM I think we have discovered that free does nor mean free in the sense that we can do anything at all, but free in the sense that we do not have preconceived rules to guide us. We don't have any preconceived 16-bar harmonic material like jazz, or a mode like the Raga system, or even a harmonic system like Bach, that is all that the freedom consists of. But nevertheless, even though we don't have these preconceived things in the free improvisation, the fact remains that to create an intelligible and meaningful piece we have got to take motivic structures, whether they be melodic, whether they be harmonic, whether they be rhythmic, and be able to build something from them like a composer does. That is how we work I think.

Fig. 3.5. Rohan de Saram. (Source: http://www.rohandesaram.co.uk/main.asp?varFunction=Gallery) (accessed 16 August 2017).

Although Rohan de Saram currently is more focused on performing contemporary music and teaching around the world, he remains strongly connected with the practice of improvisation.[25]

Frances-Marie Uitti, an avant-garde cello performer-composer that from the early 1970s stated to work with and gain inspiration from improvised experimental music, developed the two-bow system that allowed her to achieve certain musical needs that were impossible with one bow. However, before this marvellous improvement Uitti had experimented with another kind of bow. In 1972 Uitti ordered a curved bow that did not meet her expectations since it could not reach for instance the first and fourth strings simultaneously (Uitti 2000: 222). The two-bow system consists of holding two bows with the right hand: one of them over the strings and the other one underneath them. This gives the possibility to reach the four strings at the same time and enables a continuous polyphony, something that was not seen or heard of previously from only one performer. However, the system brought not only new harmonic possibilities but also dynamic, timbral, and articulation contrasts (see Fig. 3.6.).

Fig. 3.6. Frances-Marie Uitti.
(Source:http://www.stephenbrookes.com/new-writing/2011/2/21/frances-marie-uitti-at-st-marys-church.html. Copyright © 2006-15, Stephen Brookes. All rights reserved.) (accessed 10 August 2018).

After Uitti's contribution, other composers have created pieces for cello and the two-bow system. According to Uitti (2000: 222)

> Many composers have written beautiful works using the two-bow technique, notably Nono *(Diario Polacco II),* Kurtág *(Message to Frances-Marie; Homage to John Cage),* Scelsi *(Sauh; II Funerale di Carlo Magno),* Klarenz Barlow *(The Weather),* Jay Alan Yim *(Orenda),* James Clark *(Independence),* Horazio Radulescu *(Lux*

[25] Conversations with cellist Emilié Girard-Charest after she attended master classes with Rohan de Saram during the *Impuls* 2015 (9th International Ensemble and Composers Academy for Contemporary Music in Graz, Austria).

animae) and Richard Barrett *(Dark Ages;Praha),* as well as works by Jonathan Harvey, Globokar, Guus Jansen and Frances-Marie Uitti.

Over the last years Uitti has been working with engineers at the University of California to design an electronic cello that can control not only sound but also visual material (Zam 2013).

Pushing forward the first sound-generator approaches that improvisers had to the cello in the 1960s, during the 1970s and within improvised experimental music, a paradigm shift regarding cello performing continued to occur. Unlike de Saram and Uitti, who were classically trained cellists, other musicians who were not classical cellists but strongly into the practice of improvisation started to use the medium on their own musical paths and for their sonic needs. This fact is strongly connected with the idea of notions of skill in instrumentalizing. According to Keep (2009: 123).

> The notion of performer skill within experimental music does not have the same aspirational allure that it does in most other forms of music-making. During instrumentalizing the acquisition and display of skills is guided by a combination of aesthetic and artistic choice, and the potential control intimacy afforded by the object being performed upon.

Although Keep's concept of instrumentalizing was mainly referred to sound objects, it is important to consider that, for instance, when a skilled improviser performs with an unknown instrument or explores it especially through a self-taught method, the instrument becomes an actual sound object and probably the improviser's approach is purely based on the sonic qualities of the instrument and its material potentials. Tom Cora and Marcio Mattos are clear examples of using the cello from their skills instead of a solid classical technique. Moreover, both Cora and Mattos ending up developing specific individual techniques and became well-known cellists within free improvised music.

Cora called himself "a musician that happens to play the cello" and claimed that his approach to the cello was "completely irrational and impulsive" (Baxter 2005). His musical background was a drummer and jazz guitarist, activities that he performed during the 1970s. Cora rapidly entered the new music scene of New York, cooperating with Fred Frith and John Zorn, among others (Ibid). During the 1980s Cora performed frequently in the United States and Europe, collaborating with rock, punk, and experimental lineups. Alongside his career playing with different bands, Cora also worked on his solo project. From the late 1980s until the early 1990s he toured with his solo project and recorded two solo albums: *Live at the Western Front* (1987) and *Gumption in Limbo* (1991) (Ibid). In these two records as well as live, Cora used a prepared and modified amplified cello, displaying his improvisational skills with the instrument.

It is clear to perceive when listening to *Live at the Western Front* his influences of jazz, rock, punk, and noise expressed in a constant chaotic and intense feeling. On the other hand, the second album contains a more tonal-lyric and harmonic use of the cello but with a strong presence of folk and Rhythm and Blues features. However, when the cello is not processed the sound is mostly dirty and somewhat nasal. In *Gumption in Limbo* Cora used processed loops, which create several

layers and give a kind of twisted jazz and humourous atmosphere. Although Cora died on 9 April 1998, these two albums can be considered as the first solo cello releases in improvised music and made Cora the pioneer of the cello free improvisers of the 20th century.

Fig. 3.7. Tom Cora
(http://differentperspectivesinmyroom.blogspot.com/2012/09/roof-trace-1999-live-at-bremen-and.html) (accessed 12 August 2018).

Marcio Mattos plays cello, double bass, and electronics. He developed his career as an improviser from the 1970s in London, after having moved from his home country of Brazil. Mattos started playing the cello mainly self-taught after his contact with jazz music in the 1960s. Before that he was an active performer-composer involved in the *Bossa Nova* movement in Brazil. Since arriving in London, Mattos participated in several projects within jazz, free jazz, electronic, and free improvised music (Squidco ed. n.d.). Although his career as solo improviser is minimally documented, in 2015 the British label *EMANEM* released a solo album called *SOL[OS],* in which Mattos plays double bass, cello, and electronics. This album is a compilation of recordings made by Mattos himself from 1998 to 2010. However, his career includes several band releases playing together with the most important musicians from the genres mentioned above, such as Evan Parker, Derek Bailey, John Butcher, Phil Minton, and Eddie Prévost (Ibid). According to Ilic (2014)

> […] So what of the cello? During the early 1980s it made a discreet comeback. Playing it was something he did initially in the privacy of his home, just for pleasure. Then through the prism of his experience as a bassist he began to look at the instrument anew, finding different possibilities in the increased pitch range at his disposal. By 1983 he was playing it on stage, initially as another acoustic sound source, and later with the addition of simple electronics with which he could further exploit the instrument's greater tonal malleability. The cello was, he said, 'the bit of the bass that was missing; it's only now that I feel I have the complete toolkit'.

Currently Mattos continues his career playing actively with new generations of improvisers, teaching, and giving workshops in prestigious music schools in England such as the Royal Music Academy in London and abroad. He still displays in his performances a very energetic style and a deep knowledge in different cello sonic resources, as well as the constant use of noise and extended techniques.[26]

Fig. 3.8. Marcio Mattos (Source: http://www.efi.group.shef.ac.uk/mmattos.html) (accessed 13 August 2018).

Among solo cello works in improvised music, it is important to highlight the album *A Camel's kiss* (2000) by Tristan Honsinger released under the Dutch label *Instant Composers Pool*. The album shows Honsinger's versatility in style, from a kind of twisted bebop to completely dissonant atmospheres. In addition, it displays a recurrent use of his voice as part of the musical discourse as well as a constant beat pattern produced by his feet. Furthermore, the cello ranges from clear lyricism to a dirty sound. Overtones are present and he uses noise as a striking element as well. Honsinger was born in the USA but developed his career as improviser in Europe when moved to The Netherlands in 1970s (Harrison ed. n.d.). Unlike de Saram, Uitti, Cora, and Mattos, Honsinger took another path; after many years of classical cello education he decided to switch to jazz and improvised music. According to the European Free Improvisation pages

> Tristan Honsinger told Kevin Whitehead, 'I grew up in New England, took up cello at age nine in Springfield, Massachusetts... My first teacher was a Dutch Jew. Almost all my teachers were European immigrants. Later I went to the New England Conservatory. It was quite a good school, but I didn't feel very welcome, so I went to Peabody Conservatory in Baltimore from '68 to '69. By then I'd had it, really, with the whole classical music world. I changed teachers so many times, I suppose I was confused by their contradictory advice'.

[26] Personal listening analysis and informal talk with Mattos after a live performance in London on the 13th February 2015 at Hundred Years gallery.

Since the 1970s Honsinger released several albums with remarkable pioneer improvisers and jazz musicians such as Derek Bailey, Cecil Taylor, Evan Parker, and Harri Sjöström, among others. Honsinger was also involved in theatre and dance groups, which defined part of his musical identity and presence on stage (Ibid). He currently has an active career as a performer, mainly in Jazz events and festivals in Europe.

Fig. 3.9. Tristan Honsinger (Source: https://www.setlist.fm/setlists/tristan-honsinger-63c27edf.html) (accessed 10 May 2017).

The boom of improvised music generated new paradigms within cello timbre. For instance, the use of objects, modified or prepared cello, amplification, and the development of new techniques such as the two-bow system, extended the sonic palette of the medium and redefined its sound. Furthermore, the use of extended techniques such as multiphonics, broken sounds, harmonic sounds in extreme registers, percussive effects, and *col legno* among others, practically made the timbre of the cello unrecognizable.

All these factors also contributed to the emergence several cello performers that devoted their artistic and pedagogical careers to improvised music. These include Ernst Reijseger, Alfred Zimmerlin, Hui-Chun Lin, Tapani Heikinheimo, Gil Selinger, and Fred Lonberg-Holm, among many others. In addition, the spectrum of the cello expanded to almost all music practices after the 1980s not only in Europe but also throughout the world. Today the cello has become part of rock, metal, and pop bands (see 3.2.5.). Outstanding new performers also continue to explore and expand the timbral qualities of the medium through improvisational approaches, as is the case for Okkyung Lee, Stephan Braun, Cecilia Quinteros, Arnold Noid Haberl, Juho Laitinen, Emilié Girard-Charest, and Séverine Ballon, among others.

3.2.5. The cello in jazz, pop, and rock music

Whereas the repertoire for solo cello and cello with electronic media continued to grow worldwide within academic music during the second half of the 20th century, the cello also started taking part gradually in other new music trends (Uitti 2000: 222–223). By the 1960s the medium was not only visible within experimental music and improvised music but also in audio-visual arts (Rogers 2013: 174–177). Furthermore, composers and performers started to include the cello in more mainstream arenas. Collaborations among jazz, pop, rock, and classical cellists became more popular from the 1960s onwards, creating bands that included the cello in their lineups and even bands with only cellos (Cahill 2015). These symbiotic relationships seemed to have contributed to changes not only in the medium but also within these popular music genres (see analyses below). For instance, the cello sound and its technique became influenced by the genres' aesthetic features such as harmony, melodic directions, and sound quality. On the other hand, the genres expanded their sound palettes from the timbral properties of the medium. Therefore, this section intends to show the relationship of the cello sound, cello playing techniques, and the development of both within the genres mentioned above.

Jazz

While the sound of the cello brought novelty to jazz during the late 1940s, jazz also presented new approaches to cello sound and technique. From the 1950s onwards, some double bass players started to perform the cello as their second instrument and included it in their projects. This was the case, for instance, of Harry Babasin, Ray Brown, Sam Jones, and Oscar Pettiford, who are considered the firsts to introduce the cello in jazz (Grenier ed. n.d.). Although in most of their records it is clear that they used the cello primarily as a small double bass—mainly plucked—this generated significant inputs clearly seen within new generations of cello performers and influenced the solo repertoire. In fact, the *pizzicato* technique became more frequently used in the cello repertoire with different variations (see 1.). For instance, accentuated attacks with the fingers in melodic passages and chords started to appear (see chapters 1, 3, 4, and 5.). Furthermore, it is clear that the soft (when compared with the double bass) tension in the cello strings combined with the strong plucking of double bass technique brought richer resonance, especially when playing in the middle and high register. In addition, these new approaches in sound and technique that jazz double bassists brought to the plucked cello have also allowed performers to use the medium in versatile ways. A clear example is the Swedish cellist and double bassist Lars Danielsson, who uses the cello recurrently as a harmonic instrument with certain amplification and equalisation that resembles a jazz guitar.

Although the advent of the cello in jazz music was mainly attributed to double bass players from the 1950s, cello performers also started to very quickly build a good reputation for the instrument within the genre. The result was a significant number of jazz cello players appearing from different

latitudes and generations (Grenier ed. n.d.). The most well-known jazz cellists are Fred Katz, Abdul Wadud, Erik Friedlander, Ernst Reijseger, Vincent Courtois, and Stephen Braun. All of these cellists used the classical cello technique as a pillar to develop their own techniques and sonic improvements, introducing them to different territories of jazz within bands and solo projects. For instance, Katz as a jazz cello pioneer in the 1950s (Ibid) and a composer took advantage of the melodic properties of the medium mainly through traditional techniques and sound. He also remained very close to traditional jazz, which is hierarchised by scales and harmony.

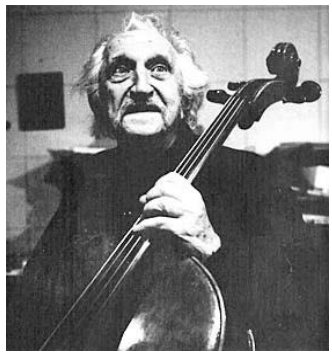


Fig. 3.10. Fred Katz (Source: https://www.discogs.com/artist/308539-Fred-Katz) (accessed 1 May 2017).

On the other hand Wadud, as an avant-garde jazz cellist (Wynn ed. n.d.), includes dissonances, extended techniques, and noise in his style. One of his striking features is the use of *pizzicati* and *glissandi* in the high register of the cello, achieved with precision and strength.

Fig. 3.11. Abdul Wadud
(Source: https://blogthehum.wordpress.com/2016/03/07/new-yorks-free-jazz-loft-scene-with-tom-marcellos-photos-from-studio-rivbea/ Photo by Tom Marcello, Studio Rivbea NYC July 4, 1976). (accessed 11 August 2018).

In his solo projects, Friedlander for example recurrently works with oriental sonorities developed in defined rhythmic patterns, polyphony, *scordatura*, and both traditional and extended techniques. His timbral approach is regularly expanded almost into noise through extreme *alto sul ponticellos* and aggressive bow attacks, among others.

Fig. 3.12. Erik Friedlander (Source: http://www.brooklynvegan.com/cellist-erik-fr/) (accessed 8 August 2018).

Reijseger is a pioneer in using the cello in a horizontal position, which allows better mobility, sound, and expression when playing more complex chords and melodies in *pizzicato*. This technique is a sort of guitarist's approach to the cello, which is used recurrently nowadays among

jazz cellists who even u[27]se guitarist's fingering and grow their fingernails to achieve velocity, polyphony, and clear sound. Reijseger also regularly plays a five-string cello with some modifications, using objects such as pins and clothes clips, among others. With these objects attached to the strings it is easy to produce distorted sounds, mainly through artificial harmonics and overtones, even using only open strings. This rich sound and technical palette explored by Reijseger over a period of decades has allowed him to create a variety of timbral textures, as well as extremely fast melodies and chords with both strong bowing and *pizzicati*, reaching the extreme low and high registers of the cello.

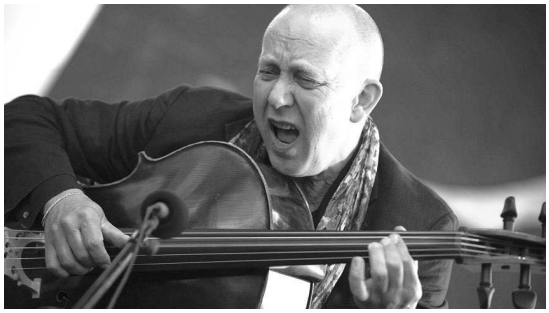


Fig. 3.13. Ernst Reijseger
(Source:
https://www.deutschlandfunk.de/jazz-live-reijseger-fraanje-sylla.748.de.html?dram:article_id=290086
Photo by Tiago Canhoto) (accessed 12 August 2018).

Courtois uses both acoustic and amplified cello within his groups and solo projects (Courtois n.d). His style ranges from the use of diatonic tonal melodies to large intervallic jumps through sustained bowings and fast *tremolo*. He also explores polyphony in repeated chords and arpeggios that range from clean to noisy *pizzicati* and bowings.

[27] Listening analysis of a live performance and informal talk with Reijseger after his concert in Helsinki (18th October 2015)

Fig. 3.14. Vincent Courtois. (Source: http://vincent-courtois.com photo by © Alessandro Zambianchi) (accessed 7 August 2018).

Braun is part of the newest generation of jazz cellists. While he has engaged in collaborations with other artists, his career has developed mainly as a soloist. Furthermore, he explores different territories of music, such as from different branches of jazz to rock, bossa nova, and world fusion (Braun n.d). Braun uses both acoustic and amplified cello, sometimes with electronic effects such as loop pedals and delays. One striking characteristic in Braun's works is the emphasis on rhythmic ostinatos and melodies played at the same time and achieved by combining scratching bow techniques, *pizzicato* (akin to the guitarist's technique used by Reijseger), and percussion on the body of the instrument. Although his approach is mainly tonal and diatonic, he sometimes includes in his work dissonant and atonal passages. In addition, Braun sometimes creates large textures using, for instance, artificial harmonics and explorations of timbral modulations accomplished through bow transitions (such as *sul tasto, modo ordinario* and *sul ponticello*).

Fig. 3.15. Stephan Braun (Source: http://stephanbraun.com) (accessed 13 August 2018).

Pop and rock

During the 1970s and 1980s, several collaborations between bands and classical music brought different sonic and technical approaches to both musicians and instruments. Furthermore, classical musicians found varied groups to participate in. The advent of disco, pop, and rock music introduced diverse sonorities and styles to instruments from classical and non-Western traditions (Holmes 2002: 407—428). For instance, the British band Electric Light Orchestra included in its lineup one electric violin and two acoustic amplified cellos, which had both a melodic and harmonic function. The two cellists also incorporated within the band a different way of playing cello through the standing upright position, akin to an upright double bass position. However, as the cello is smaller than the bass, the position is accomplished using the whole length of the cello endpin and requires a different body balance than when sitting.[28]

Fig. 3.16. Electric Light Orchestra
(Source: https://www.birminghammail.co.uk/whats-on/gallery/classic-pictures-jeff-lynne-elo-7774781) (accessed 5 August 2018).

Within more underground arenas and after the collaboration of the improvising cellists Tristan Honsinger and Tom Cora with the Dutch punk band The Ex, (Bush ed. n.d.) the 1990s introduced other territories for cello practices. Furthermore, the establishment of the cello in rock and pop lineups expanded its sonic perspectives and not only contributed to maintaining the development of new techniques, but also generated other approaches in the construction of the medium. For

[28] See https://www.youtube.com/watch?v=Up4WjdabA2c

instance, factories and cello makers such as Luis and Clark[29] and Yamaha[30] started to produce acoustic instruments made of carbon fibre and electric bodyless cellos. However, some of these changes in the construction seemed to be based on musician necessity. For instance, amplification became a usual tool in the medium to balance volume levels among electric guitars and drum sets. Moreover, cellists started to use with greater frequency electronic processes, pedal racks, and computers to achieve diversity within the cello sound. Two clear examples are the cello bands Rasputina and Apocalyptica.

In 1996, the New York-based band Rasputina, formed by two singing cellists and one drummer, released its debut album Thanks for the ether. The band, founded by Mellora Creager, appeared as one of the first pop-rock bands in the United States that used cello as the main instrument (Rasputina n. d). In Thanks for the ether, the cellos are slightly amplified and their sound is treated with basic electronic processes such as distortion, flange, and delay, among other effects. The second album How we quit the forest (1998) displays a stronger treatment in the sound of the cellos, for instance using dense distortions that resemble electric guitar sounds. The remaining Rasputina albums—Cabin Fever (2002), Frustration Plantation (2004), Oh Perilous world (2007), Sister Kinderhook (2010), and Unknown (2015)—display an alternative and industrial rock influence combined with elements of pop, blues, and grunge. Despite the processes and sonic explorations that Rasputina brought to the cello throughout their seven albums, the cello sound remained organic and its timbre was easy to recognise.

Fig. 3.17. Rasputina. (Source: https://rasputina.com/rasputina-pictures/sr2xrynwm5529apzq6jnakalalqo2p photo by Steve Park) (accessed 1 July 2018).

[29] https://luisandclark.com/product/cello/

[30] https://usa.yamaha.com/products/musical_instruments/strings/silent_series/index.html

The Finnish cello rock band Apocalyptica appeared with its first album *Apocalyptica plays Metallica by four cellos* in 1996. The record is a cover album with instrumental arrangements of eight songs by *Metallica* (Apocalyptica n.d.). Throughout the album, the sound of the cellos is slightly processed; however, the strong bowing technique developed by the performers creates most of the power in the sound. The album *Apocalyptica plays Metallica by four cellos* presents a clear example of re-instrumentation. The new sound sources (four cellos) recreate the original ones (electric guitars, electric bass, drums, and voice) under the same formal and harmonic parameters but through a sort of timbral convergence. Namely, the original sonic idea remains but it is represented with a different timbre. However, Apocalyptica developed and even established certain techniques used later not only by themselves exclusively but also by upcoming cello rock bands, such as *2cellos* and *Break of Reality*. For instance, extremely fast *tremolo* and *spiccato* and *col legno battuto* allow cellists to achieve percussive sounds and the distinctive speed present in rock music and heavy metal. *Inquisition symphony* (1998) includes covers by several bands and their own compositions. The sound of the cellos in this album is processed with different distortions, reverbs, delays, and bypass filters, with which the cellists accomplish different timbres.

Nevertheless, some songs and excerpts in the album keep a less processed cello sound, as in the first album. In *Inquisition symphony*, other striking features regarding re-instrumentation are presented. For instance, in the song *Refuse/Resist,* a *Sepultura* cover, the sonic representation of the guttural voice style by Max Cavallera is achieved in the cello using bowing overpressure on the fourth string under the bridge. The third album *Cult* (2000) contains mostly the band's own compositions and features vocals and percussion. Compared to the previous albums, the sound of this album is denser and more percussive. *Cult* shows a band investigating new sounds in its compositions, such as noise. The album also demonstrates how the cello techniques used in the first album have developed strongly, expanding the cello technique virtuosity far beyond from that of classical traditions. All these factors demonstrate that the band was exploring new sonic directions and searching for their own style.

The next four albums, *Reflections* (2003), *Apocalyptica* (2005), *Worlds collide* (2007) and *7th Symphony* (2010), include a drummer as a regular member in the band and feature different instruments such as keyboards, winds, vocals, programmed sequences, and strings, among others. At this point, Apocalyptica had switched from a sort of chamber rock ensemble to a metal band and defined a new lineup with three cellos and drums. Unlike previous albums, *Shadowmaker* (2015) combines more musical elements used within different territories of rock and metal music. Timbres, structures, harmonies, and rhythms present in heavy metal, symphonic metal, thrash metal, hard rock, and alternative rock, among others, coexist and create an eclectic album. *Shadowmaker* is the first album where the band features only one vocalist and includes fewer instrumental tracks.

Fig. 3.18. Apocalyptica (Source: https://www.apocalyptica.com/en/ photo by Juha Arvid Helminen) (accessed 3 June 2018).

Rasputina and Apocalyptica have not only released several albums with special editions and bonus tracks, but they have also performed live regularly since their inception (Raspituna n.d., Apocalyptica n.d.). These factors seem to have contributed to popularising the cello within rock and pop music. *Rasputina*, for instance, is well known within the alternative rock, industrial rock, and grunge scenes in the United States and has collaborated with important producers and bands during the 1990s and 2000s, such as *Marilyn Manson*, among others. Furthermore, the band has gained inspiration from visual arts and design, which has also influenced its music (Rasputina n.d.).

Apocalyptica has captivated audiences worldwide throughout its career and its strongest influences are classical music and metal. However, they have collaborated with different types of musicians, producers, bands, and ensembles such as *Avanti!* and VAMPS (Apocalyptica n.d.). Nevertheless, coming from and aiming at completely different styles, the two pioneers of cello in rock music show some convergent points in their sonority. Their first albums (*Thanks for the ether* and *Apocalyptica plays Metallica by four cellos*) suggest a conventional cello sound, while subsequent albums clearly show a process of re-signification of the cello. For instance, the cello resembles electric guitars through overdrive and distortion on power fifth chords. Using harmonisers, long delays and filters, among other effects, the cello also becomes a sort of synthesizer or generator of multiple sounds. Furthermore, the function of the cellos to replace, imitate, or integrate with the conventional rock lineup have led to novelty and extensive use of certain techniques such as power riffs, percussion on the body, and *col legno battuto*, among others.

This shows a development in the sound of both bands through sonic explorations within the instrument, which has somehow been influenced by the genre. Namely, the first albums reveal the necessity of including the cello and consolidating its natural sound within these genres, in which

the medium was little used. Subsequently, the medium became further explored, generating unconventional sounds not only in the instrument itself but also within the genre. However, despite all the new sonic directions that Rasputina and Apocalyptica explored in their music, the natural cello sound was also present, blending constantly and coexisting with the new sound perspectives.

Since the 2000s, more bands have included cellos in their lineups and cellists have also started their own rock- and pop-based projects. Moreover, soloists have appeared within the genres, mainly using loop pedals and singing. Amongst them are, for instance, 2Cellos, Break of Reality, Honningbarna, MÚM, The luminers, NiLEM, Zöe Keating, Ben Sollee, Maya Beiser, Mr. Marcaille, and Max Lilja, to name but a few.

In addition to the development in techniques and timbral resources that the relationships among cello, jazz, pop, and rock music have brought, it is important to consider the role of the composer-performer, improviser, arranger, producer, and songwriter. This has changed the idea of the composer being the only one capable of and responsible for creating music and extended the notion of the instrumentalist as the one in charge of interpreting these creations.

PART II

THE CELLO AND CELLO WITH ELECTRONIC MEDIA IN THE 21ST CENTURY IN COLOMBIA: A BROAD AND ECLECTIC REPERTOIRE

As previously discussed, the contribution of Latin American composers and performers to the solo cello and cello with electronic media repertoire is remarkable from the second half of the 20th century until today, not only because of the number of pieces written but also regarding timbral developments and the use of extended techniques. According to Marcano's catalogue (2004), hundreds of pieces for solo cello and cello with electronics were composed during the 20th century by Latin American composers. Nevertheless, the production of such repertoire was larger in Argentina, Brazil, Chile, and Mexico. In Colombia, approximately 60 pieces were composed during the entire 20th century that include cello in different instrumental formats such as solo, chamber music, and soloist with orchestra (Marcano 2004: 149–161, Prieto 1998: 348). However, there are only ten pieces composed for solo cello (all composed before the 1990s) and none of the works feature electronics.

From 2000 to 2015 the situation was significantly different. The repertoire for solo cello and cello with electronic media by Colombian composers includes approximately 18 pieces. This indicates that compared to the entire 20th century, the number of works for this arrangement has increased significantly. One of the reasons why there was so little repertoire for solo cello during the last decades of the 20th century, and why there were no pieces for solo cello or cello with electronics, seems to be the lack of interest in contemporary music among Colombian cellists. According to Acosta (2016)

> Many Colombian composers have used often cello within different chamber ensembles. Nevertheless, the non-existence of a cellist interested in contemporary music has not permitted a development of a repertoire for solo cello and cello with electronics. […] In Colombia there has not been a cellist interested in generating new repertoire like for instance, Beatriz Elena Martínez on voice, or like Anssi Karttunen on cello in Finland. (Ia:1)

It is necessary to add to Acosta's claim a perspective on the higher education curricula of cello studies in Colombia during the turn of the 21st century. Between 1995 and 2003[31] there were almost no graduation cello recitals in the conservatories that included international or Colombian solo pieces composed during the second half of the 20th century. Furthermore, the curricula of cello studies did not assign any relevance to new solo repertoire and even it was less concerned about the repertoire for cello and electronic media, which by this time was already large. Moreover, remarkable pieces by Colombian composers that displayed virtuosity and novelty in playing techniques such as *Trópico de Capricornio* for solo cello (1984) by Guillermo Rendón and *Integración Sonora para cello y cellista* for solo cello (1989) by Eduardo Carrizosa, were and continued to be almost unknown among cello students and professionals. In other words, most of the cellists were focused in their curricula of studies that included the most famous solo and

[31] During this period I was pursuing my cello and composition studies, as well as following most of the cello graduation recitals in the most important cities in Colombia. Moreover, due composition studies, my interest in contemporary music increased, which led me to start searching for cellists and cello students interested in contemporary music all over the country.

orchestra concertos, cello and piano sonatas and the Bach *Suites*. These facts seemed to have generated within cello students a sort of common unawareness of the existence of extended playing techniques, cello modifications, and cello preparations, among others, as well as apathy towards the new repertoire. Consequently, this could have led to a lack of motivation among composers to write pieces for solo cello and cello with electronics.

Although from the new century onwards there has been a considerable improvement in Colombian cello schools and a generational shift within cello teachers in the conservatories and different emergent music schools, the promotion of the new repertoire continues to be a secondary concern for cellists and within the curricula of studies. However, this did not seem affect the emergence of several new pieces during the 21st century. By 2015 the solo cello and cello with electronic media repertoire by Colombian composers almost doubled the number achieved in the entire 20th century. The new century's repertoire is not only large (considering the short time in which it has appeared) but it is also very diverse. Furthermore, some of the pieces clearly display the influence of extramusical elements and the inclusion of varied media such as video, dance, performance, theatre, literature, *soundscape*, and painting. Thus, part of the repertoire has been built beyond the idea of a pure musical thinking,[32] underlining the current importance of new media, multimedia, and interdisciplinary collaborations.

Considering Acosta's idea, it is clear that the increase in the solo cello and cello with electronic media repertoire in the 21st century in Colombia and its significant characteristics are not primarily connected with the collaboration between local composers and local performers. Rather, it can be connected mainly to two important matters:

1) The internationalisation of the Colombian musician[33]

The emigration of Colombian composers, instrumentalists, and conductors to other South American countries, Europe, and the United States became more common during the second half of the 20th century. However, from the 1990s onwards, due to globalisation phenomena and the social, political, and economic crisis that the country was facing, the number of musicians that emigrated to live or study abroad increased radically.

Among all these emigrant Colombian musicians, composers are the ones that have emigrated the most from the turn of the 21st century until today. One reason comes from the necessity to find an international work field that more easily creates the interactions with performers interested in contemporary music (Gutierrez interview VIb: I). Another reason is the lack of support and

[32] This matter is approached in detail within the analysis of pieces that included extramusical ideas in their compositional process. (5.2. and 5.3.).

[33] In this chapter musician refers specifically to the practitioner of Western academic music.

promotion of their creations within the local musical scene[34] and therefore the limited opportunities (compared to instrumentalists) to make a living as composer (Ibid). It is nevertheless worth mentioning the support of different festivals, venues, and concert series and their organisers to Colombian composers from the 1980s to the 2000s. Among them are the *Festival internacional de música contemporánea de Bogotá*; the series *Jóvenes compositores colombianos*; the *Festival en Tiempo Real*, *nuevos encuentros sonoros;* the series *Lado B, nuevos encuentros sonoros;* the *Colón electrónico;* the *Círculo Colombiano de Música Contemporánea*, and *matik-matik* (Acosta 2014: 15, 19, 21). Furthermore, some institutions continue to support Colombian composers. That is the case for instance of the *Banco de la República de Colombia,* which within its series *Jóvenes intérpretes* requires all performers to include in their concert programs at least one piece by a Colombian composer and pays the royalties for showcasing the piece. Among other institutions that promote and fund composers' work are the Ministry of Culture and the government of the city of Bogotá. These institutions organise yearly composition competitions and very often grant projects related to new creations.

By the year 2015, some of these series and festivals no longer exist or do not have sufficient financial support. On the other hand, the effort of the institutions is insufficient considering the large number of composers that constantly search for funding and promotion. However, Colombian composers today have earned international recognition and the scene continues to grow not only in Colombia but also worldwide. In fact, almost all the composers that have created the solo cello and cello with electronic media repertoire during the 21st century have lived, studied, worked, or resided outside Colombia. Nonetheless, this emigration seems to be a positive factor since it has given composers the opportunity to work with different cello performers interested in contemporary music, experimentalism, improvisation, and multidisciplinarity, among others.[35]

2) The expansion of the musician's role

During the turn of the 21st century, Colombian composers and performers became increasingly involved in improvised music, electronic music, experimentalism, sound-art, and multimedia, among others. However, during the 1960s and 1970s Colombian composers such as Jacqueline Nova, Blas Emilio Atehortúa, Gustavo Sorzano, and Jesus Pinzón started to create and promote electroacoustic music, graphic notation, and multidisciplinary performances in Colombia and abroad (Acosta 2014: 13–18). Furthermore, between the 1980s and 1990s Colombian composers active in the local and international scene began to strongly experience the transformation of the musician into a sort of new figure that creates, performs, invents, improvises, and collaborates

[34] This refers to the community of musicians, ensembles and institutions involved in Western academic music.

[35] This subject is expanded in the analysis of the pieces (5.2. and 5.3.).

with other artists and artistic disciplines. Some of these pioneers include Ricardo Arias, Roberto García, Juan Reyes, and Mauricio Bejarano. (Ibid: 18–22.)

From the 2000s onward, the rapid development of technology and electronic music and the strong influence of experimentalism, indeterminacy, conceptual art, performance, and sound-art, among others, strongly stimulated the emergence of a sort of new type of Colombian performer, composer, improviser, and artist. Consequently, many of these new *sound practitioners*[36] created or influenced (or both) the solo cello and cello with electronic media repertoire of the 21st century using diverse means of approaching creation, interpretation, and interaction. These processes were generated mainly by the educational and artistic activities of the pioneers, who in fact were part of the wave of emigrant Colombian musicians during the second half of the 20th century (Ibid: 18–22).

General analysis of the repertoire

The next two chapters present a compilation and analysis of 18 pieces by 11 composers, all born in the second half of the 20th century, ranging from the generation of the 1960s to the 1980s. The list includes Colombian composers based in Colombia and Colombians based elsewhere.

The most significant convergent feature within all these pieces is the search for new timbral developments; timbre thus continues to be one of the main elements to be explored. Such explorations are mainly approached through the use of extended playing techniques, the inclusion of national elements, the influence of noise, and the insertion of varied types of electronic devices, such as computer software and analogue procedures, among others. Another remarkable characteristic of the repertoire is the importance of the composer's personal path. For instance, not all the pieces belong to a certain style or were created under a defined composition technique. Rather, the pieces strongly represent a personal investigation or a personal composition process. In fact, the combination of different musical languages and composition techniques has established a sort of *eclecticism* within the pieces. For instance, rock, pop, and Colombian folk music are merged with modal, tonal, and atonal systems, among others. Furthermore, the relationship between composition and improvisation appears as a significant characteristic in some of the works, generating personal systems of notation and different methods of form and structure. On the other hand, some pieces are inspired by rituality, indigenous traditions, and reflections on identity. Nonetheless, a necessity to relate to modern and post-modern art tendencies and to globalisation is clearly perceived within the cello repertoire of this century.

Regarding technical aspects, a crucial common ground appears within all the pieces: the coexistence of extended playing techniques and new media with traditional cello techniques. For instance, most of the pieces analysed in the following two chapters display the presence of both

[36] This is limited in this case to use the terms composer, instrumentalist, performer, sound artist, etc. They are called sound practitioners since all of them work with sound from their personal practices.

traditional and extended techniques, which somehow represent a combination of sonic languages and technical approaches under the same musical context. In fact, what is perceived in the repertoire is an actual well-established new technical cello tradition, which seems not to make any comparison between techniques or to determine a chronological difference but rather intends to unify all these aspects to generate new creations.

Another important matter within this repertoire is its *indie* form of distribution and publication. Namely, most of the pieces compiled and analyzed here are not even published. Rather, they have been edited and shared independently using software and online platforms such as Sibelius, Finale, YouTube, SoundCloud, and personal websites, among others. However, there are very few pieces that are promoted by publishing houses and record labels, which have rather little —online and physical— distribution. Among them are Cayambis Music, Babelscores, Arts First Records, and Ambiances Magnétiques (see references).

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4. ANALYSIS OF WORKS FOR SOLO CELLO FROM 2000 TO 2015 BY COLOMBIAN COMPOSERS

4.1. List of works for solo cello

The following list is organised in alphabetical order and includes the name and date of birth of the composer, followed by the title of the piece and year of composition. In case the composer has more than one piece, the pieces are listed in chronological order. The titles of most of the pieces appear in the language that the composers used. However, English was the language chosen to indicate the ensemble (for solo cello, etc) written in any other language other than English and Spanish.

Castrillón Arcila, Sergio Andrés (1981)

- *Trilogía para violonchelo solo* (2002–03)
- *Desde las entrañas del Sudtrópico* para violonchelo solo (2008–10)
- *3 piezas A-formales/3 A-formal pieces* para violonchelo solo (2009)
- *Detrás de la montaña* para violonchelo solo/*Behind the mountain* for solo cello (2012–13)
- *Yo soy la selva* para violonchelo solo */I am the jungle* for solo cello (2014)

Cruz, Violeta (1983)

- *TÁNTALUT* para violonchelo solo (2007)

Duarte-López, Jairo (1977)

- *Ekphrasis sobre "El Miedo" de Tanguy (Ekphrasis on "The Fear" of Tanguy)* para violonchelo solo (2007)

Gutiérrez Zuluaga, Sergio (1987)

- *Meditaciones y contemplaciones* para violonchelo solo (2012)

Leguizamón Zapata, Daniel (1979)

- *Pieza para violoncello solo* (2009)

Suárez Cifuentes, Marco Antonio (1974)

- *Kärlek Splittring* for solo cello (2005–08)

Triana, Alba Fernanda (1969)

- *Antífona (Antiphony)* for unaccompanied cello (2000)

4.2. Analysis of pieces for solo cello

The following pieces are organised in chronological order according to the year of composition. These analyses aim to emphasise timbral subjects related mainly to the idea of timbral modulation, timbral polyphony and timbral re-signification through the use of extended techniques (see 1. and 2.). Although these pieces display in one way or another a search for timbral explorations, there are some pieces that give special importance to these explorations, which justifies the difference in extension of each analysis. Nevertheless, the analyses also highlight other features of the works, which are not necessarily comparable among them. Therefore, considering the variety of styles, the compositional approaches, and for instance the different notational systems, each piece is analysed with the most appropriate methodology.

4.2.1. *Antífona (Antiphony)* by Alba Fernanda Triana

This composer's work ranges from contemporary music to sound installations and the inclusion of technology. *Antífona* (2000) was composed in Los Angeles (United States) and published by Cayambis Music Press in 2015. The piece lasts around eight minutes and its form is developed by a constant call and response of contrasting materials, in which discernible and non-discernible elements and various colouristic palettes guide an articulated responsorial discourse (Triana, et al. n.d.). The piece also suggests an improvisatory character through a proportional rhythmic notation that intends to give mainly a general gestural idea instead of strict rhythmic values.

To investigate in detail some of the subjects mentioned above, it was important to understand the composer's view on the compositional process of the piece:

> Basically in all my pieces there is experimentation. I try not to write things that I have seen a lot written before or techniques that I have seen a lot before. Then, what I did in this piece was to work with a cellist and we tried things. […] So I had meetings with her to search for effects. Then I continued with the piece myself and the cellist tried sometimes what I was writing and I just adjusted details. In general in my pieces I test things in a very intuitive way, especially in this piece, which is the most intuitive of all. […] Therefore Mintcho, who is the cellist that did the version that you probably have heard, tells me that when he plays the piece, people ask if it is an improvised piece because there are many open elements. But it is not like that, it is a really determined piece even though the rhythmical notation is a bit free and it feels very easy, very intuitive, and very spontaneous (Interview II: 1).

The composer mentions experimentation and intuition as striking features within the compositional process of *Antífona*. Therefore, even though the piece is completely determined, the sort of freedom that *Antífona* expresses seems to be strongly related to the features used during the compositional process and the manner of being notated.

Although the title of the piece and its narrative development could seem to be related to some extramusical idea, Triana comments:

> There is not extra-musical content in this piece. Although almost all of my pieces have interdisciplinarity, there is not any metaphor or something like that. What they do have is a conceptual content that refers to music itself, to the music status, to what I think music means. In *Antífona* there was a reflection about music, intuition and musical expressivity. […] Especially in Europe, after the 20th century, there is a rejection to music being expressive, emotive. There is a tendency of seeing those characteristics as cheesy. […] Then in this piece I conclude that emotion understands and knows. I mean emotion is intelligent. Emotion is not only dumb and superficial, as it seems to be. On the contrary, in emotion and intuition there is an intelligence that is superior to the individual, something that is beyond us. Therefore I think that the most beautiful thing of this piece is how I allowed myself to do everything with intuition and expressivity, not afraid of it. I worked in an intuitive way, trusting and enriching my brain constantly to then enrich more my work. […] I trust a lot in an intelligence that I believe is more metaphysical and that is beyond me as individual, an intelligence that I feel is connected more to an intelligence of nature […] (Interview II: 2).

The reflection that Triana mentions regarding intuition and musical expressivity explains the interaction of those features, which somehow build the narrative of the piece. Furthermore, intuition is established as an element in an intersection between form and narrativity. The composer finally argues that content is seen more as conceptual and not extramusical. However, the strong presence of emotion and instinctive approaches during the compositional process continues to give the impression that the narrative of the piece is not purely coming from the music itself but also from an emotive state of the composer.

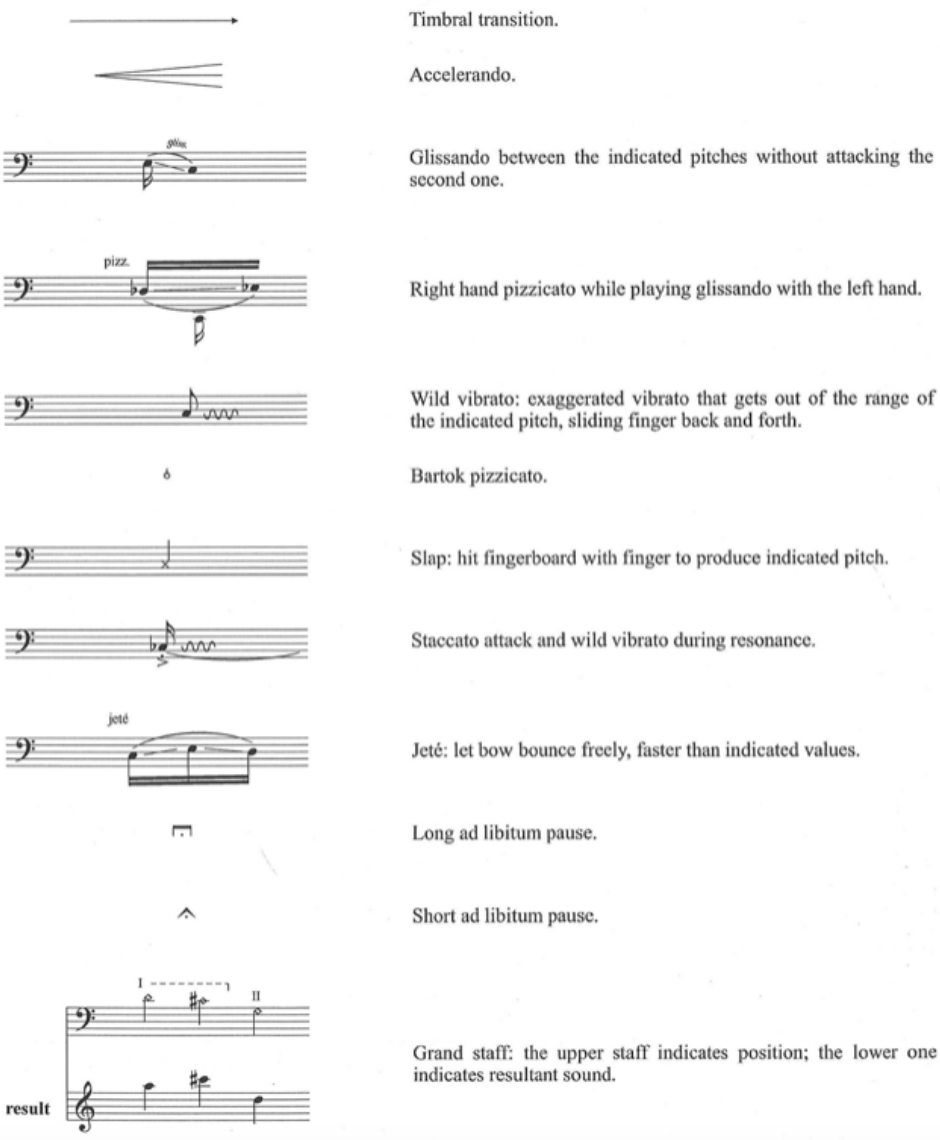
Regarding the importance of timbre within the piece, the composer comments:

> There is obviously an interest not only in timbre but also in density and texture. For instance, it is very important in the piece [and that is the reason why it is called Antífona] the shifting between discernible [where you can hear a musical idea, sing it, repeat it] and non-discernible passages [more abstract ideas, where the perception is more global, these are more like masses of sound […]. There is an interaction in this juxtaposition and there is certain timbral exploration. However, the piece is not based on exploring the timbre of the cello. The timbre is an element more connected to the gestures; namely, it is supporting what the gesture needs. Also the timbre is supporting resonance, even though resonance is not always considered as a material. But in this piece I am taking decisions thinking of resonance and interacting with it. For instance, when a sound comes it triggers the resonance, after that certain action is applied to the resonance, and then another sound can come creating an important textural interaction (Interview II: 3).

In addition to the composer's view regarding timbre, the following analysis presents other perspectives on timbre and its significance within the piece through three main subjects:

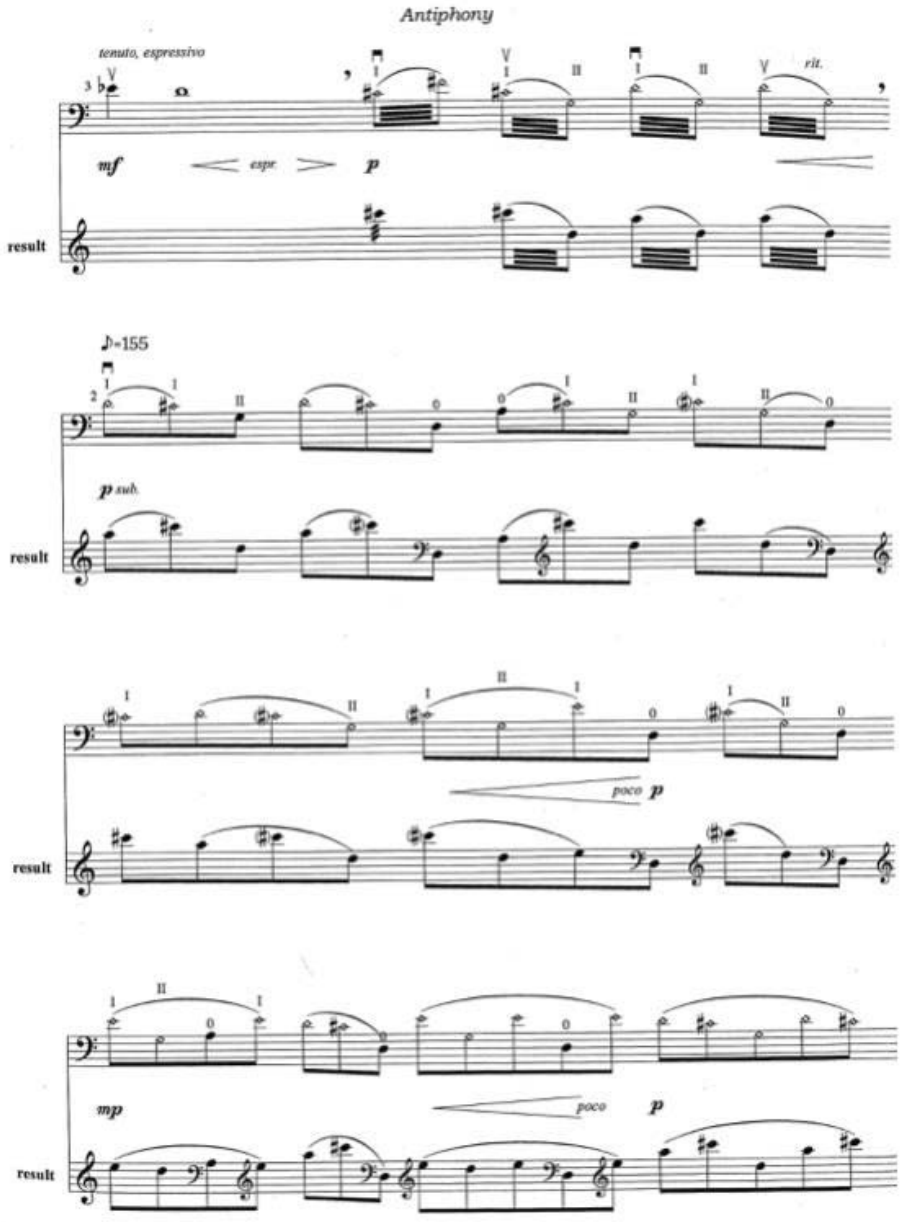
1) The constant use of extended playing techniques

The piece includes techniques such as bow transitions between *sul ponticello* and *ord;* bow articulations such as *jeté, flautando, tremolo*, and *staccato*; natural and artificial harmonic sounds; and a detailed use of *glissandi* and *pizzicati* (see Ex. 4.1).



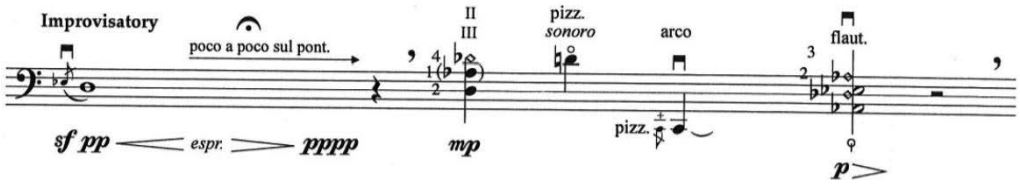
Ex. 4.1. *Antiphony* by Triana (2000: 2).

These techniques generate for instance timbral modulations, diverse percussive effects, light and dense textures, and noise elements (see 3.2.3.). Numerous times throughout the piece these sonic features appear combined or superimposed (or both) in single gestures creating a timbral polyphony (see 2.2.). For example, the piece includes a long passage where trills, *tremolo*, harmonic sounds, and open strings interact constantly, generating different textures and colours within the same gesture (see Ex. 4.2).



Ex. 4.2. *Antiphony* by Triana (2000: 5).

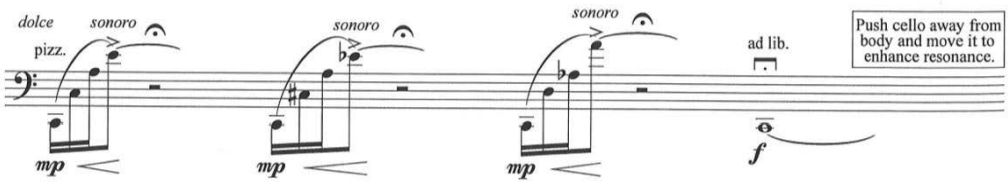
Antífona also combines techniques and dynamic ranges that generate distinctive textures. For instance, the piece starts with a long note gesture in the middle register that suddenly filters upper harmonic partials. The process consists of a slow bow transition from *ord* to *sul ponticello* combined with a dynamic range gesture that changes rapidly from *sf* to *pp* and then moves to a *pppp* with a crescendo and decrescendo in between. The next gesture of the piece shows four successive events, each one presenting a different technique and articulation in a soft dynamic range (the first three in *mp* and the last in *p* towards *decrescendo).* The first event is a double stop in which one note is pressed and the other is an artificial harmonic sound, namely, a double stop not only with two different notes but also with two different timbres. The second event is a *pizzicato sonoro* in a natural harmonic, which suggests a resonant percussive high-pitched sound. The third one is the lowest note of the cello attacked twice, once by plucking and the other one by bowing. This creates the idea of two different timbres coming from the same note. Finally, the last event presents a double stop in artificial harmonics *flautando*, which results in a sort of bright woodwind sound (see Ex. 4.3.).



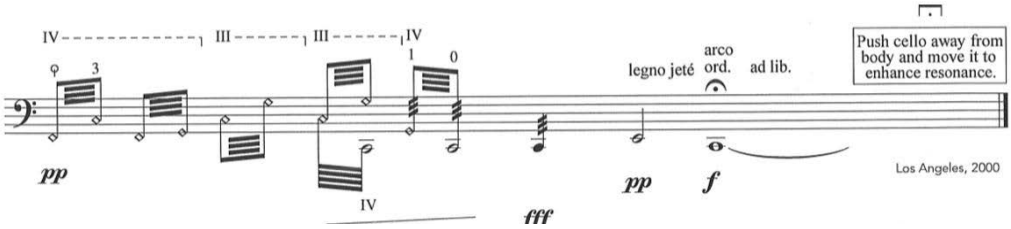
Ex. 4.3. *Antiphony* by Triana (2000: 3).

2) The use of resonance as a timbral element.

Returning to the idea of timbral polyphony, resonance is used in the piece to create a special layer. Namely, the remaining fraction of sound that resonates after certain attack is muted almost not at all throughout the piece. On the contrary, this spectrum of sound is a sort of pedal that remains and is superimposed by subsequent sound events, generating diverse timbral layers within the medium. This can be seen in the second phrase of the previous music example where the four different events resonate and superimpose one by one the following. On the other hand, the composer indicates twice in the piece a performance gesture that aims to enhance and spread resonance in the space. This gesture clearly states and connects the previous attempts to present resonance as a striking timbral material (see Ex. 4.4. and 4.5.).



Ex. 4.4. *Antiphony* by Triana (2000: 8).



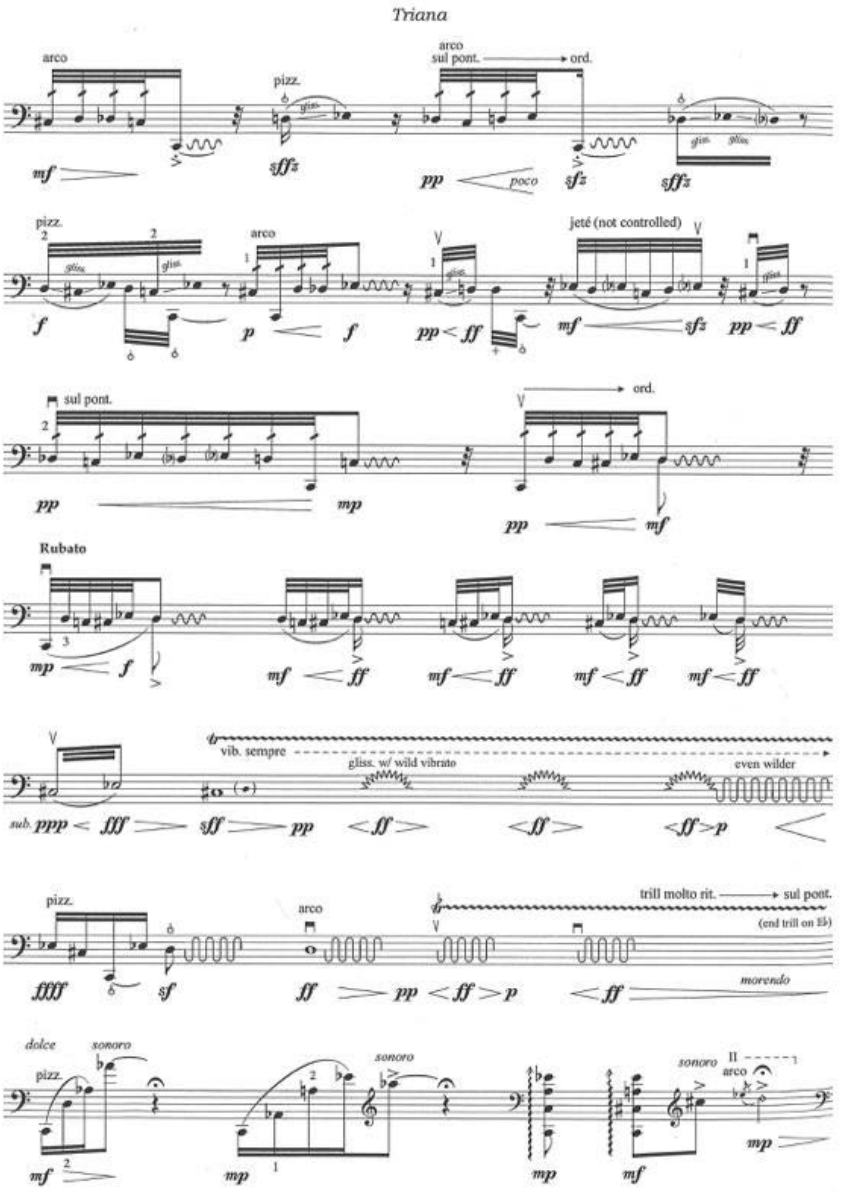
Ex. 4.5. *Antiphony* by Triana (2000: 9).

However, resonance also represents one of the main materials in *Antífona*, contributing not only to the timbre but also to the form. According to Triana's website (et.al. n.d.)

> Named after the medieval form for its constant reference to the call and response of contrasting elements, the piece confronts contrary expressive features, discernible and non-discernible materials, and different harmonic and coloristic palettes. Perhaps the most notable foreground consisting of the actual notes played on the instrument; and an equally important background, comprised in elaborations of the foreground notes resonances. Pitch fluctuations of the resonance create a counterpoint-like discourse, which destabilizes the perception and behavior of the foregrounds ideas.

In addition, the silences marked in the score seem to occur most of the time as transitions between musical gestures instead of pure silences, which again clarifies the composer's idea of using resonance as a strong timbral element (see Ex. 4.6). This is also clearly perceived in a live version video recording[37] of *Antífona* in 2007 by the cellist and editor of the piece Mintcho Badev during the concert Homage to Alba Fernanda Triana in the Banco de la República in Bogotá.

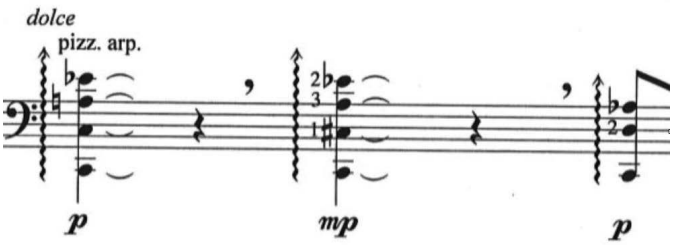
[37] (http://www.albatriana.com/ant%C3%ADfona.html).



Ex. 4.6. *Antiphony* by Triana (2000: 4).

3) A re-signification of the medium

As explained in the first and second chapters, in this thesis new timbral directions are mainly approached from the idea of timbral re-signification, re-instrumentation, and the use of extended playing techniques. *Antífona* is an example where these features are present. For instance, in this case the composer suggests a specific use of *arpeggios* in *pizzicatti* that are not commonly used in bowed instruments but in plucked instruments. This directly defines these playing techniques as extended. Therefore, the use of plucked instruments' techniques in the cello re-signifies its timbre, which provides evidence of timbral re-signification of the medium through a process of re-instrumentation (see Ex. 4.7).

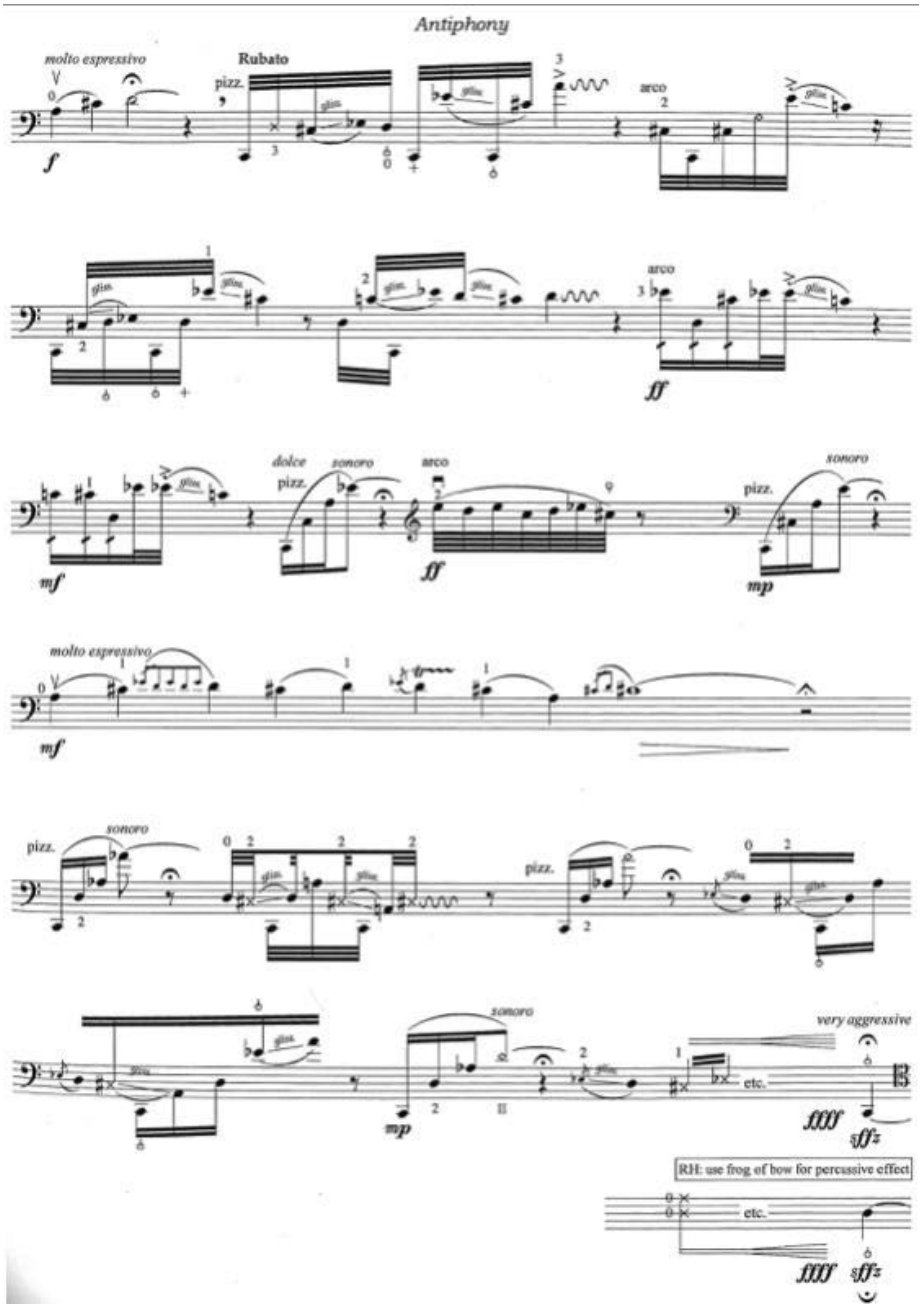


Ex. 4.7. *Antiphony* by Triana (2000: 3).

Furthermore, the composer comments:

> […] I was interested in using the cello as a sort of guitar with the two hands. Also I wanted to use a lot of resonances. Namely, if at some point there is a *glissando* and at the same time there is another thing, there is a superimposition of notes that generates an interaction between the resonances. (Ia: 1)

In addition, the composer demonstrates throughout the piece the importance of *pizzicato* used in various manners to such an extent that the instrument becomes a sort of triple instrument that has bowed, plucked, and percussive functions in the same context. Namely, *Antífona* is a work that constantly combines different extended techniques within single gestures, which brings novelty to the timbre and re-signifies the instrument (see Ex. 4.8).



Ex. 4.8. *Antiphony* by Triana (2000: 7).

Some other examples connected to the two previous subjects are observed in some passages from Kodaly's *Sonata* where the cimbalom is *re-signified* using certain trills, *pizzicatti* and bow articulations, among others (3.2). On the other hand, the way that Apocalyptica *re-instrumentises* the cello using power fifths, fast *tremolo* and percussive effects, among others, resemble the sound of electric guitars, bass, and drums (3.2.5.).

According to the composer, *Antífona* is a work that is the result of experimentation, intuition, expressivity, and emotion (Ia: 1,2,3). Hence, all these features built its form, narrative, concept, notion of space, and playing techniques. Moreover, Triana claims that exploring the timbre of the medium was not the main idea within the compositional process. In fact, for her timbre was used mostly as a support for the gestural and spatial treatment of the piece (Ia: 3).

Nevertheless, taking into consideration an aesthesic view that resulted in the previous analysis, timbre could not have been the strongest element to explore during the compositional process. However, due the treatment of certain elements such as techniques and space, timbre actually became a dominant element in the result of the piece. In fact, the sonic features of what can be perceived as discernible and non-discernible material, which are the structural pillars of the piece, have themselves an opposed timbral content; one is represented by a simple sonic structure easy to perceive and even repeat and the other one explores a more complex structure. This not only presents an antagonistic behaviour in form, narrative, and technique but also shows a timbral duality throughout the entire piece. Specifically, the timbral duality expressed by the discernible and non-discernible materials generated a complex timbral cosmos that was not conceived within the compositional process, but remarkably unconsciously emerged. Therefore, *Antífona* clearly shows that the juxtaposition of extended playing techniques, a certain notion of space, and a medium's re-signification potentially contributes to the experience of new timbral directions in the solo cello.

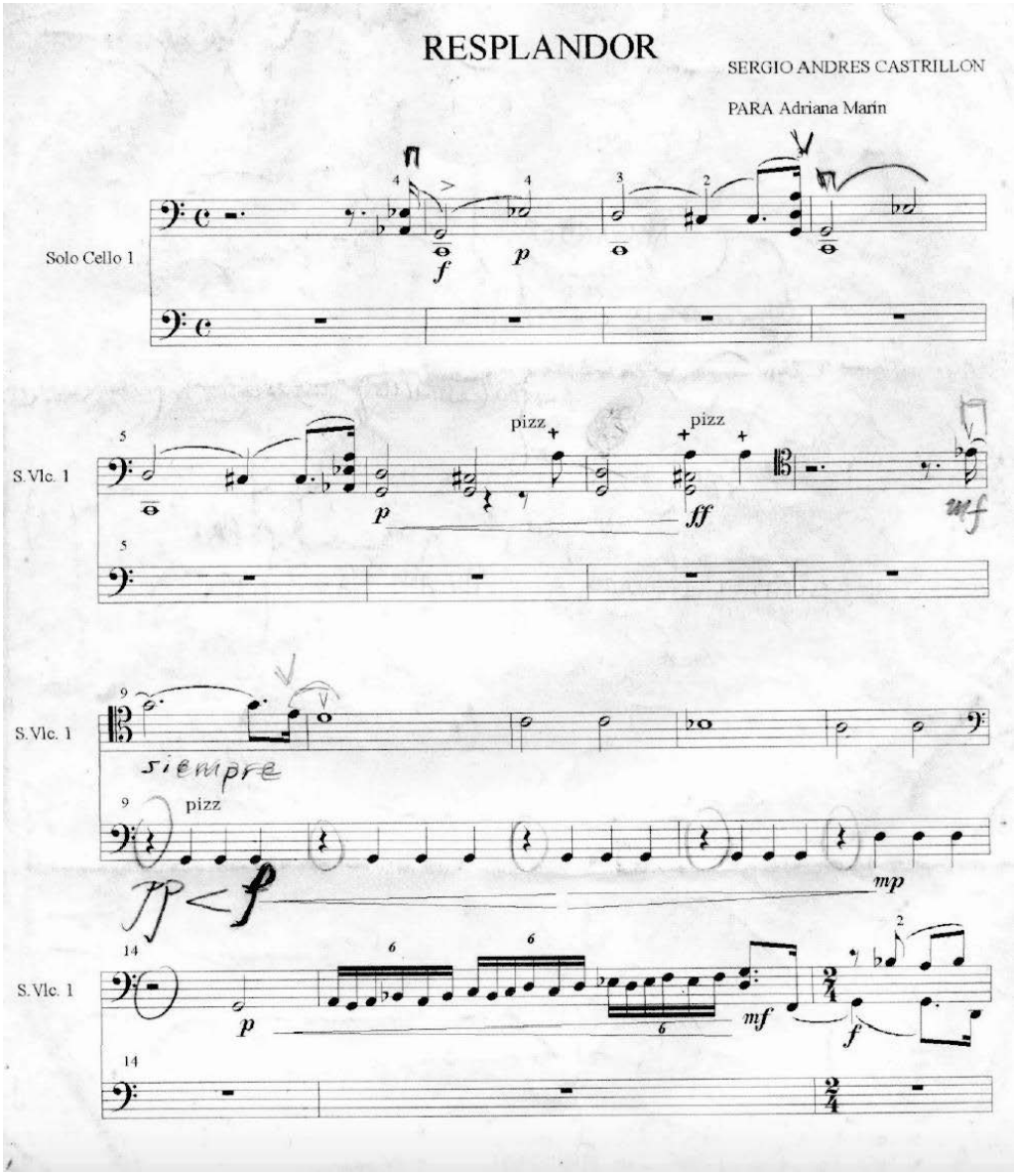
4.2.2. ***Trilogía for solo cello*** by Sergio Andrés Castrillón Arcila

This work was composed between 2002 and 2003 in Manizales, Colombia and is part of the composers' early pieces. The majority of these pieces are based on juxtapositions of elements commonly used in early 20th century music, such as oriental scales, ancient modes, dodecaphonic series, and free atonalism, merged with rock and elements of Andean Colombian music. *Trilogía for solo cello* is divided in three movements, each one inspired by a different performer. The first movement is called *RESPLANDOR* and it is dedicated to the Colombian cellist Adriana Marín, who was an active advisor during the whole composition process. *RESPLANDOR II* is the second movement and is a sort of self-portrait that confronts the position of the composer as a performer and vice versa. In 2008, a revision of this movement was selected by the art festival *Seres Híbridos* in Buenos Aires (Argentina) to be premiered at its opening. The new version was a multidisciplinary performance for amplified cello, dance, electronics, and video that included the

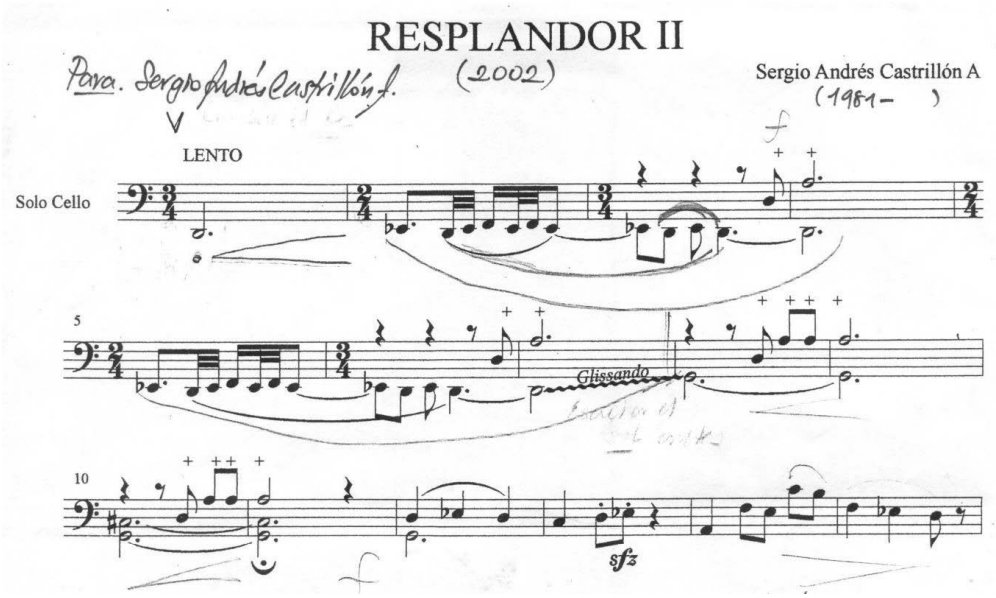
Chilean dancer Carolina Marín and the Chilean audio-visual artist, composer, and guitarist Esteban Agosín.

The last movement of this trilogy is called *TERCER SITIO NOCTURNO* and was dedicated to the French cellist Marc Coupey. Although Marín was responsible for the premiere of entire piece in 2003, the sort of homage in each piece is more connected to the compositional process, since the pieces emerged after the composer's impression of the cellists' musical skills and from his relationship and encounters with them. Marín was the composers' cello teacher from 1999 to 2003 in Manizales and Coupey gave two master classes in the same city attended by the composer during 2002 and 2003.

The main materials of the first and second movement of *Trilogía for solo cello* are based on Aeolian and Phrygian modes. However, there is a recurrent use of harmonic intervals within and beyond the octave. For instance, major and minor sevenths, octaves, ninths, and other compound intervals are present among the two movements (see Ex. 4.9 and 4.10).

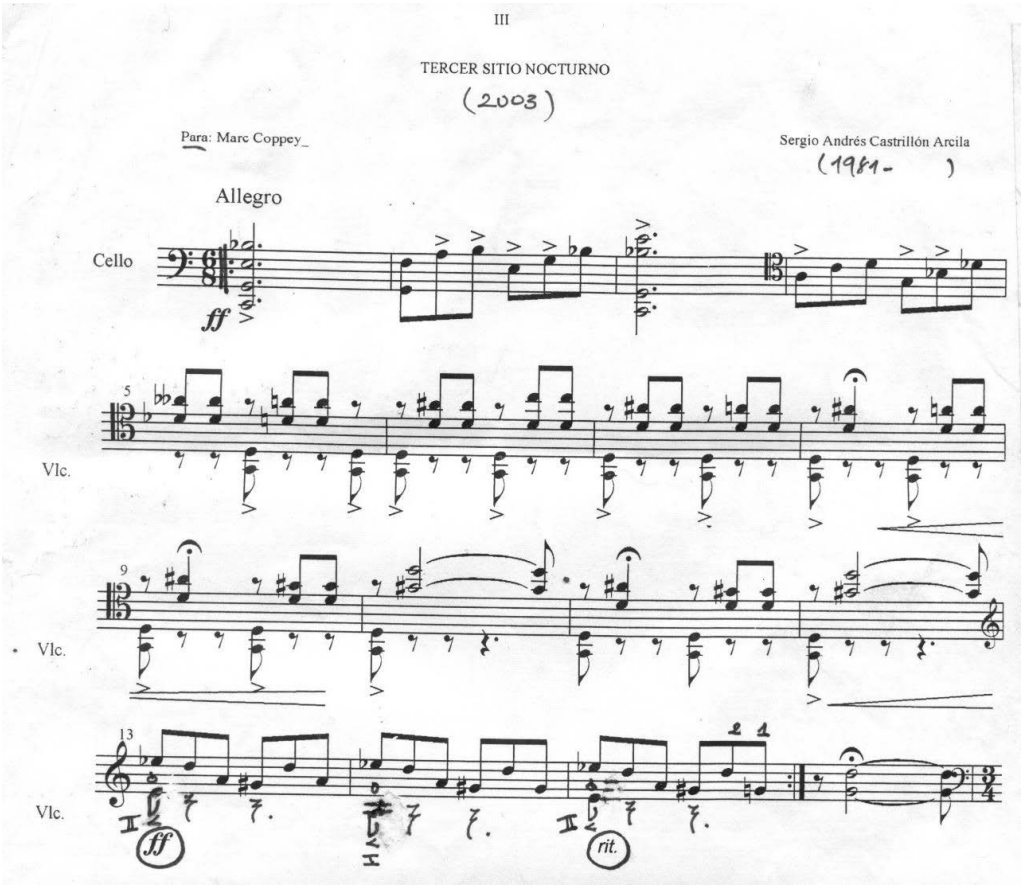


Ex. 4.9. *Trilogía para violonchelo solo (Resplandor)* by Castrillón (2002–03: 1)

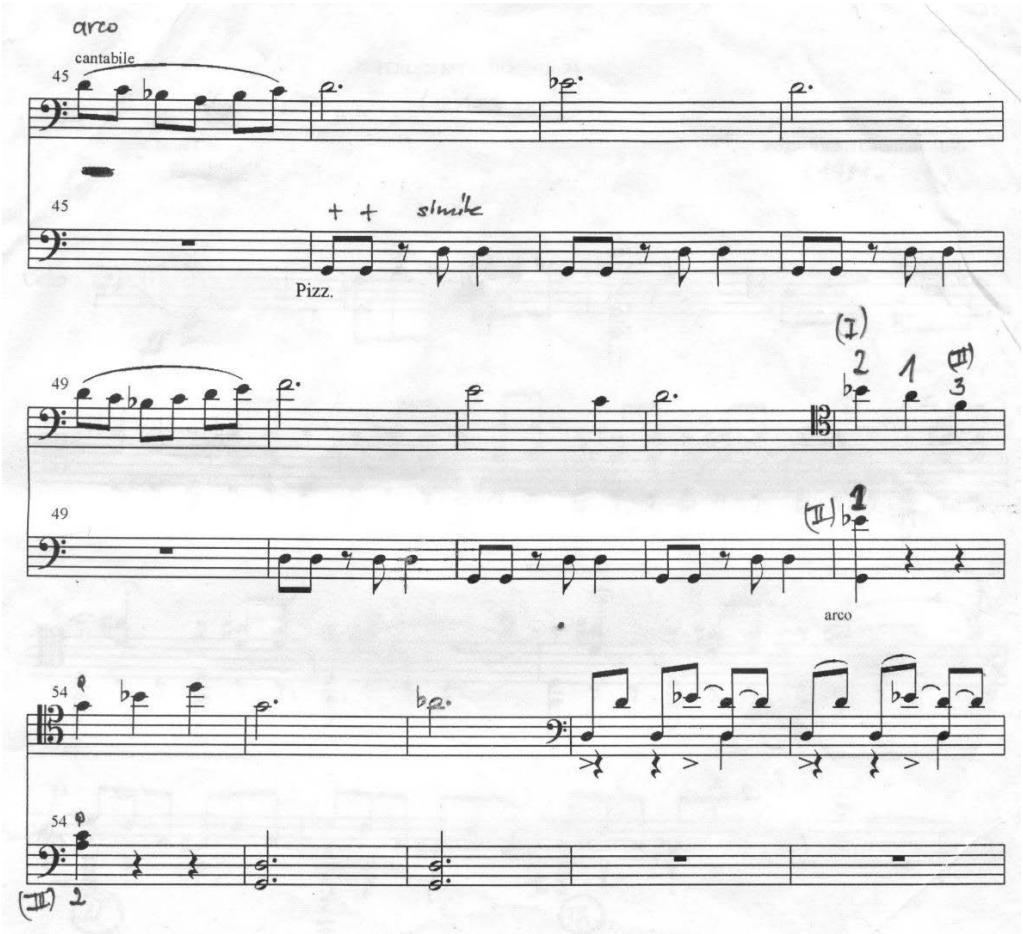


Ex. 4.10. *Trilogía para violonchelo solo (Resplandor II)* by Castrillón (2002–03: 1)

On the other hand, the third movement explores chords, intervals, and arpeggios formed mainly by tritones and fifths. However, towards the end the Aeolian and Phrygian modes reappear alternated with some chromatic passing notes (see Ex. 4.11 and 4.12).



Ex. 4.11. *Trilogía para violonchelo solo (Tercer Sitio Nocturno)* by Castrillón (2002–03: 1)

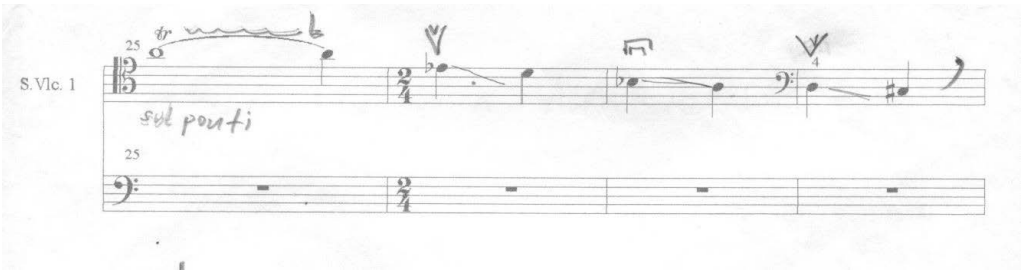


Ex. 4.12. *Trilogía para violonchelo solo (Tercer Sitio Nocturno)* by Castrillón (2002–03: 3), mm. 45–58.

The form of the three movements is based on a sort of asymmetric ABAC with some bridges and repetitions in between, which explains how traditional form and personal style coexist. *Trilogía for solo cello* contains diverse changing rhythmic patterns and, for most of the piece, defined time indications. Furthermore, the work also intended to explore and transform the rhythms of traditional Andean Colombian music, such as *pasillo* and *bambuco* (see Ex. 12).

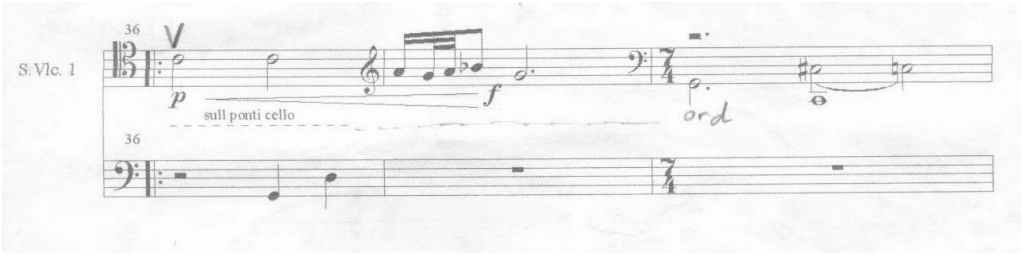
Regarding timbre, the piece mainly intended to use the traditional timbre and techniques of the cello. However, there are a few extended techniques used in some passages that bring a different timbral atmosphere to the piece. For instance, in the first movement there is a passage where a half-tone trill in mid-high register is played *sul ponticello* leading to a group of overpressed half-

tone descending *glissandi* that range from the middle to the low register. These extended techniques appear suddenly in the passage, bringing up metallic and noisy elements into the lyrical and clean sonic idea that the piece exhibits from the beginning (see Ex. 4.13).



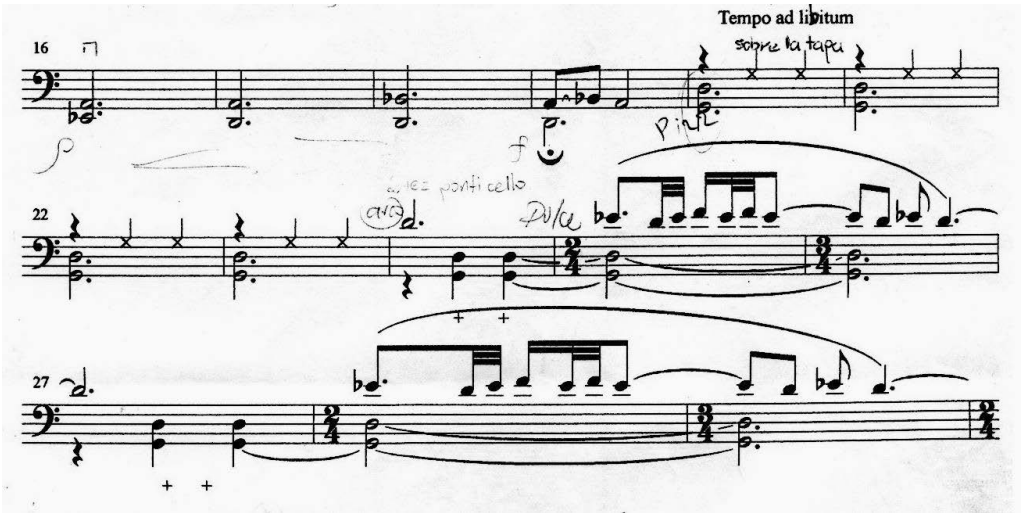
Ex. 4.13. *Trilogía para violonchelo solo (Resplandor)* by Castrillón (2002–03: 2), mm. 25–28.

Furthermore, there was an intention to investigate timbral modulations when bow changes and register shifts occur simultaneously. Throughout the piece the bow changes never appear in transition but suddenly from one bow position to another. However, certain treatments used sometimes in the dynamics seem to create a sort of illusion of transition that is not produced by the actual change between bow positions but is generated by a transition between dynamic ranges and register shifting. For instance, towards the end of the piece there is a phrase within the mid-high register in *sul poticello* that starts from *p* and step by step increases to *f,* leading to another phrase into the low register in *modo ordinario.* Hence, there is an effect of transition produced by the crescendo and the register shifting even though the timbral modulation between *sul poticello* and *modo ordinario* was completely sudden (see Ex. 4.14).



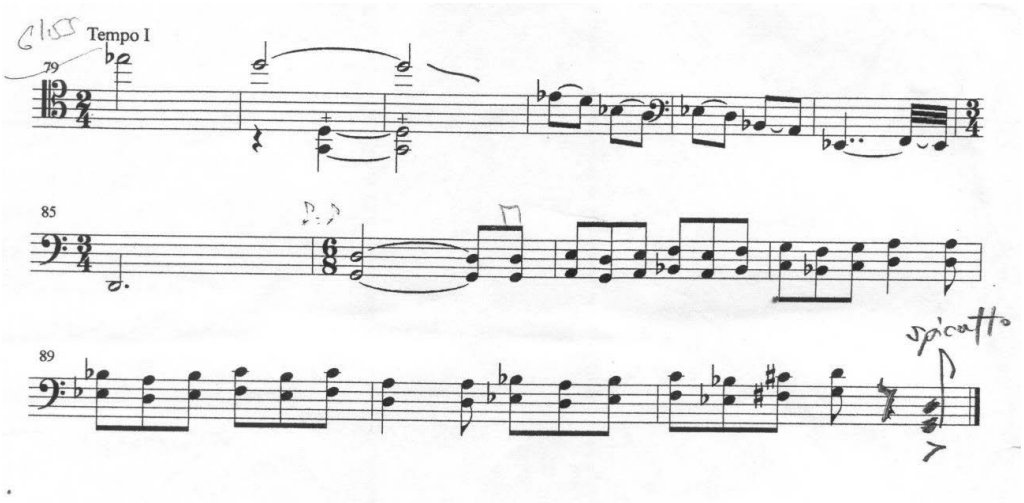
Ex. 4.14. *Trilogía para violonchelo solo (Resplandor)* by Castrillón (2002–03: 3), mm. 36–38.

The second movement introduces a constant rhythmic passage alternating between 3/4 and 2/4, which represents a sort of distorted *vals* rhythm. First, a double-stop open-stringed *pizzicato* interacts with a sequence of two percussive sounds on the body of the instrument. Secondly, when the rhythmic pattern is established, a bowed melody appears and the sounds on the body are shifted to the same open-stringed *pizzicato* and maintain the same rhythm until bar 27. These gestures contain a polytimbral development where bowing, plucking, and hitting techniques are used within the same passage; each brings a different sonic characteristic. Another important feature within the same passage is the timbral modulation suggested through the change of bow position. The bowed melody that appears in bar 25 should be played twice but with a different technique. The first time is played in *modo ordonario* and the second *sul ponticello*, while the *pizzicato* accompaniment remains the same (see Ex. 4.15).



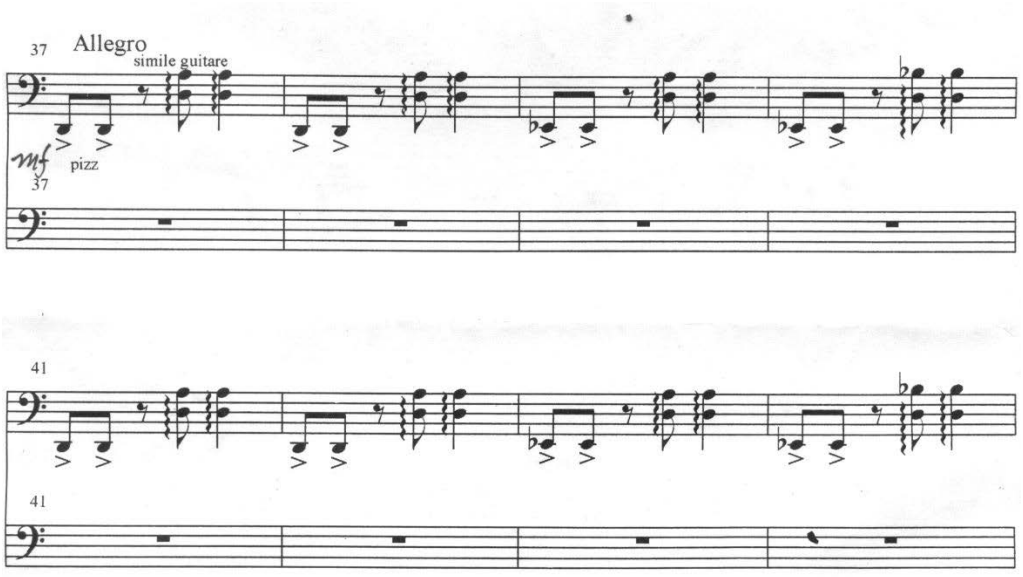
Ex. 4.15. *Trilogía para violonchelo solo (Resplandor II)* by Castrillón (2002–03: 1), mm. 16–29.

The last passage of the second movement shows a clear example of re-instrumentation. The sequence of fifths in double stops applied in a scale progression and the final *spiccato* strike intend to resemble electric guitar and drum sounds. In fact, the whole passage represents a sort of rock music gesture on a solo cello (see Ex. 4.16).



Ex. 4.16. *Trilogía para violonchelo solo (Resplandor II)* by Castrillón (2002–03: 4), mm. 79–91.

TERCER SITIO NOCTURNO also shows an idea of timbral re-instrumentation. For instance, the last passage intends to represent the role that the guitar has in the traditional Colombian string quartet within a *pasillo* rhythm (see Ex. 4.17).



Ex. 4.17. *Trilogía para violonchelo solo (Tercer Sitio Nocturno)* by Castrillón (2002–03: 2), mm. 37–44

In conclusion, although *Trilogía para violonchelo solo* clearly reveals its fundamental idea based on traditional form and the presence of Colombian national elements, some extended techniques and some elements from the idea of re-instrumentation in the piece reveal an approach to timbral explorations.

4.2.3. ***Kärlek Splittring*** by Marcos Suárez Cifuentes

This piece is the first of a series of pieces for cello in which the primary aim was to develop the instrumental technique and to take it towards unknown territories.[38] *Kärlek Splittring I* was published in 2012 by Babelscores and is dedicated to Delphine Biron, who started working with the composer in different projects since 2003. However, the compositional process of this piece started in 2005, and the piece was premiered in 2008 by Pierre Strauch in Paris (Suárez Cifuentes 2017.). Regarding the compositional process, Suárez Cifuentes comments:

> […] I wanted to develop a writing method that would integrate the physical memory and the listening memory as a way of working on essential methods within extended playing techniques, and quarter tone intonation. From that point on, I started to use *scordatura* in all my string pieces, and I still continue in this process. Also I started to work with double natural harmonics that produce differential sounds. Furthermore, I am exploring different types of notation and thinking of the instrumental gesture in detail […] (Interview III: 1).

The use of extended techniques is a fundamental idea within the piece and was initiated by the composer after a series of meetings with Biron. This collaboration consisted mainly of an instrumental exploration work based on improvisation and was also focused on trying out defined ideas that the composer was interested in (Suárez Cifuentes 2017.).

Although *Kärlek Splittring* does not intend to evoke any extramusical matter, the composer explains:

> […] I think of my pieces as *instrumental choreographies,* so maybe the extramusical connection is the gestural aspect; the choreographic aspect. Perhaps the title as well, which is in Swedish and means *Love Splinter.* This was a kind of hidden answer to a Swedish composer called Målin Mange, who wrote a song called *Song Splinter,* in reference to my piece *Circular Song* […] *Love Splinter* can be also connected to the compositional work, namely, there is a continuity in the gestures but it is fragmented, like a splinter […] (Interview III: 2).

With respect to rhythmic treatment, *Kärlek Splittring* presents constant changes in time signature and tempo; both are notated in detail in the score and clearly explain the idea of fragmented gestures into a sort of continuity throughout the whole piece (see Ex. 19.). This detailed treatment of rhythm and time somehow suggests that the duration of the piece should not vary much from

[38] Here the composer refers to unknown territories for himself and for the instrumentalists that he is working with.

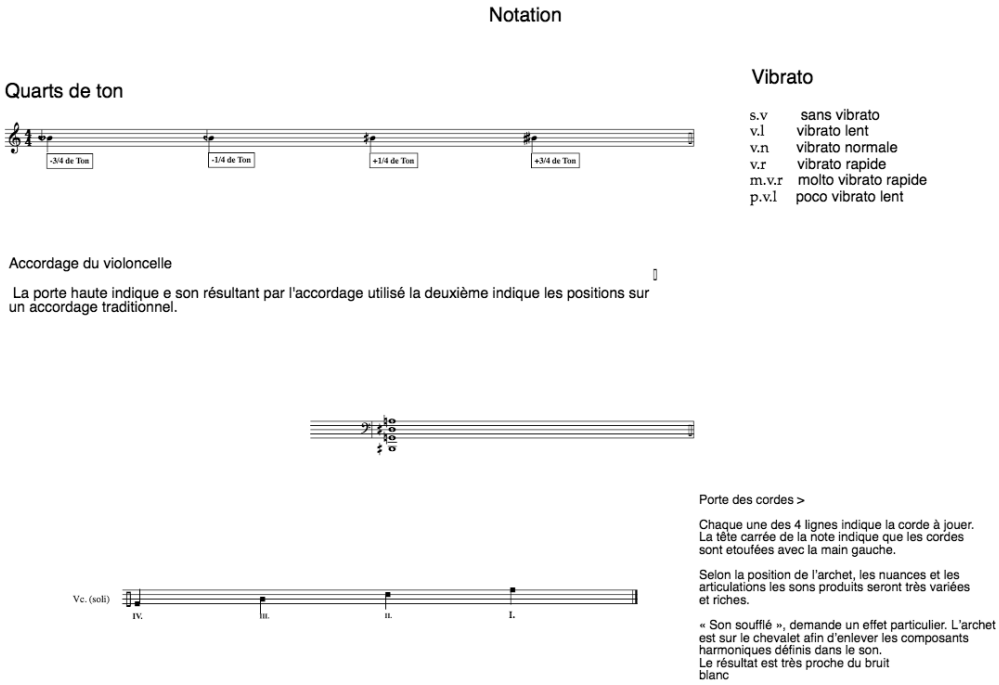
one performance to another. A live version of the piece by Jeanne Maisonhaute has a duration of circa *7'20''*.[39]

On the other hand, the piece strongly emphasises timbral aspects. According to the composer:

> Exploring timbre is the essence of the piece and the essence of my work. However, beyond this exploration I would say that my work it is more focused on the development of a language that allows to understand timbre as a more concrete idea, something more apprehensible for the performer, something very well written, very well detailed in the notation. Timbre is certainly a fundamental aspect as it is for instance the dynamic range, the articulation and all the rest of the things. Namely, timbre in my work is more connected to musical language as such, than to the concept of timbre as a sound "effect". Timbre is included in the instrumental language of my work and my pieces have as a goal the development of a writing method that takes timbre to a level of integration in a continuum language, where every gesture is annotated timbrically. (Interview III: 3).

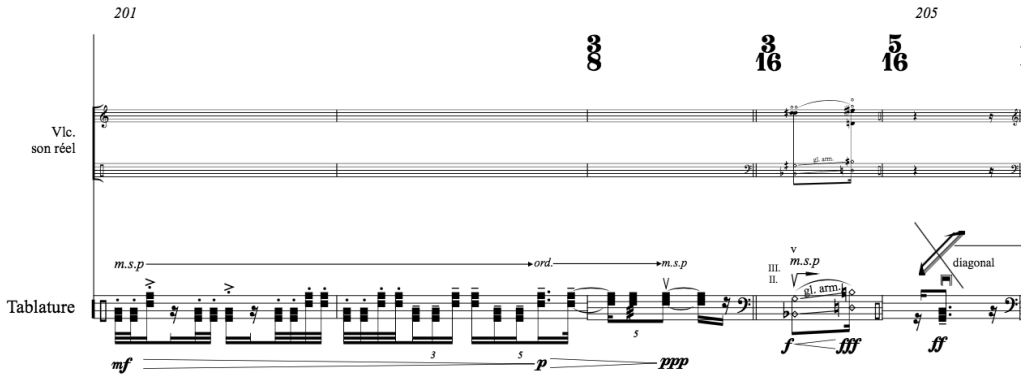
Kärlek Splittring is the first piece within the repertoire by Colombian composers in the 21st century that strongly emphasises the notion of instrumental deconstruction through the process of timbral re-signification, which includes a systematic use of noise and a deep development of different extended techniques. Therefore, the piece is notated in a unconventional way that facilitates a clear understanding for the performer of every gesture and timbral procedure. However, even though the score is complex and includes graphic notation, it indicates precisely the intention sought by the composer. For instance, the piece suggests four different ways of achieving quarter tones, six different *vibrato* variations, and a *scordatura* tuning consisting of two open stings detuned in quarter tones and two open strings tuned natural. Moreover, the composer alternates in the piece between defined and undefined pitched sounds. The latter sounds are played by muting the strings. Depending on the position of the bow, the sounds achieved will vary in intensity, timbre, and articulation (see Ex. 4.18).

[39] This version was published by the composer on the 10th January 2017.
https://www.youtube.com/watch?v=Y_ZZh_vY37Q



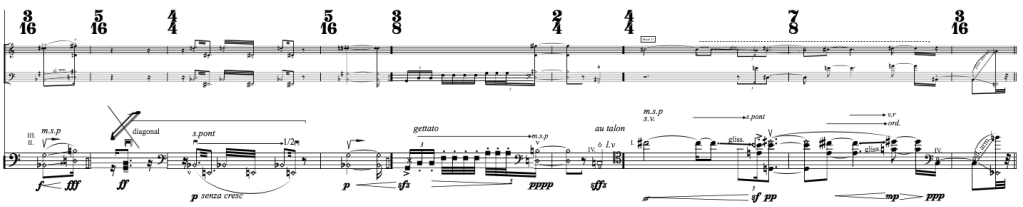
Ex. 4.18. *Kärlek Splittring* by Suárez Cifuentes (2005–08: notation).

The score of the piece shows two parallel staves. The lower one is a tablature that indicates the positions where the musical gestures should be executed, as in a standard cello tuning. The upper one is a double staff that shows the sound result, or as it is written in the score (the actual sound). However, this specific notation is not only used as a pitch transposing procedure but also as a performance guide. Namely, one staff suggests the actions of the cellist and another staff that translates those actions into sound. On the other hand, this type of notation clearly displays the sonic intention of the gestures and indicates precisely where the defined and undefined pitches are (see Ex. 4.19.).



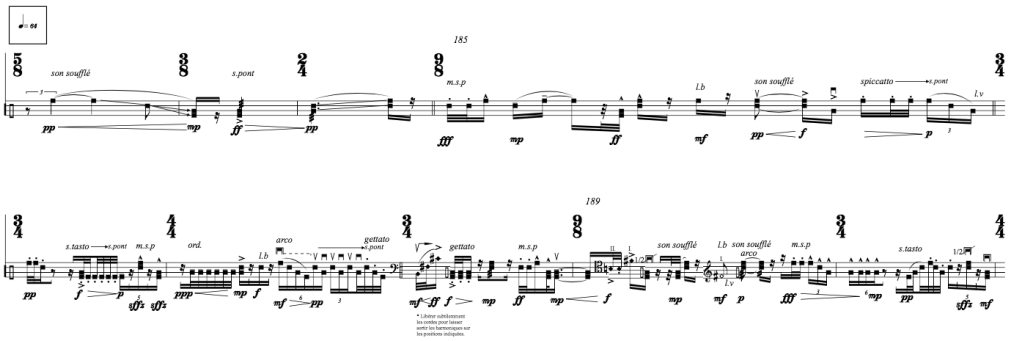
Ex. 4.19. *Kärlek Splittring* by Suárez Cifuentes (2005–08: 12), mm. 201–205.

One of the most striking features of the piece is the use of transitional and sudden timbral modulations, which are accomplished by changes in bow position (a. *ord, s. pont, m.s.p, s. tasto).* Furthermore, the use of double pressure with different intensities (full and 1/2) and diagonal bowing creates a wider and varied noise sound range. Namely, it represents a sort of scale of noises, where each noise has a specific timbral characteristic. For instance, the diagonal bowing gesture with full overpressure resembles a granular sound filtered from the upper to the lower partials of the tone (see Ex. 4.20.).



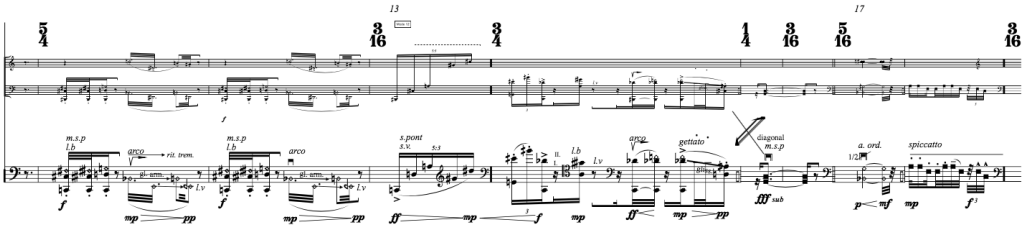
Ex. 4.20. *Kärlek Splittring* by Suárez Cifuentes (2005–08: 1), mm. 1–9.

However, the timbral treatment becomes more complex when different attacks and dynamics are added to those passages where the noise element is more present, to such an extent that the pitch definition almost disappears and the sound result is more a percussive-noise one (see Ex. 4.21.).

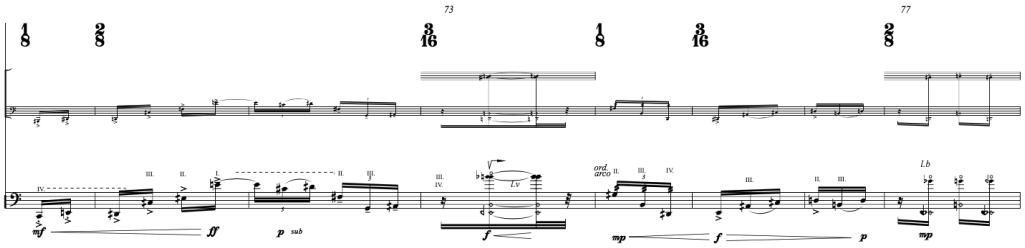


Ex. 4.21. *Kärlek Splittring* by Suárez Cifuentes (2005–08: 11), mm. 182–190.

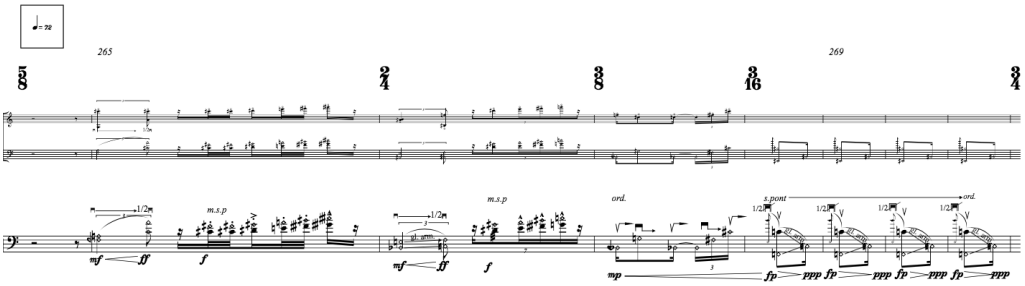
On the other hand, the composer repeatedly requests the accomplishment of natural and artificial harmonics, which are not only a hierarchical timbral element but also key in the construction of the piece's form. In fact, from the first phrase of the piece it is clearly perceived that there is a type of main cell gesture that constantly takes different forms because of the rhythmic and tempo treatment. However, its articulation and timbre remains almost the same throughout the piece. This cell is a natural double-stopped harmonic that varies to a fingered *tremolo* or trill, which becomes a sort of timbral *litemotive* that alternates with artificial harmonics, natural pressed sounds (most of the time, distorted by the articulation and bowing), and percussive-noise sounds. Hence, all of these sounds are the primary timbral and formal materials of the piece (see Ex. 4.22., 4.23. and 4.24.).



Ex. 4.22. *Kärlek Splittring* by Suárez Cifuentes (2005–08: 1), mm. 11–18.

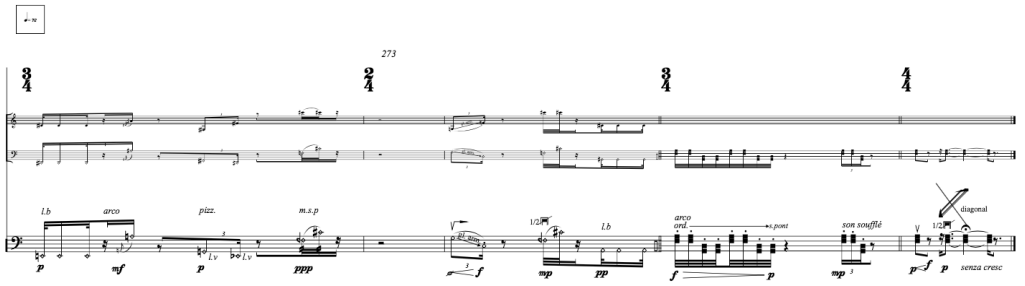


Ex. 4.23. *Kärlek Splittring* by Suárez Cifuentes (2005–08: 4), mm. 70–77.



Ex. 4.24. *Kärlek Splittring* by Suárez Cifuentes (2005–08: 16), mm. 264–271.

The last part of the piece suggests more fragmented passages where the intensity in the dynamics decreases but the gestural and timbral treatment is more intense. For instance, percussive attacks alternating between *arco* and *pizzicato,* natural harmonics articulated in *tremolo* and *glissando*, and non-pitched-noise sounds are executed with bow overpressure and transitional and sudden bow position shifting. In other words, very short and rather quiet phrases are treated with complexity in terms of sound and expression. (see Ex. 4.25.)



Ex. 4.25. *Kärlek Splittring* by Suárez Cifuentes (2005–08: 16), mm. 272–275.

Regarding timbre, *Kärlek Splittring* resembles somehow the notion of *musique concrète instrumentale* implied by Lachennmann (see 3.2.1.). On the other hand, the notational system of the piece strongly emphasises the idea of instrumental choreography as mentioned by Suárez Cifuentes. However, even though Lachennmann and Suárez Cifuentes show complexity and detail in their timbral and notated musical ideas, in the case of both composers there is an implicit awareness of the difficulty in fully controlling every sound event. In fact, these compositional styles reveal the fact that the sound result depends mainly on the performer's actions and on the specific sonic characteristics of each medium.

4.2.4. ***Ekphrasis sobre "El Miedo" de Tanguy*** by Jairo Duarte-López

This piece is dedicated to the cellist David Gerstein and was commissioned by the Hanson Institute for American Music of the Eastman School of Music at the University of Rochester in 2007. The composer's work encompasses several musical forms and genres, including chamber music, choral, orchestral, electroacoustic, opera, and solo music. Furthermore, Duarte-López participates actively in diverse audiovisual projects, in which he collaborates with filmmakers and other composers creating music mainly for short films. Another significant characteristic among the composer's work is the influence of literature and painting in some of his pieces. For instance, his opera-in-progress *Bodas de Sangre*, co-composed with his wife Michaela Eremiášová, is based on the play *Bodas de Sangre* written by Federico García Lorca (Duarte-López 2009). In the score of his solo cello piece Ekphrasis sobre "El Miedo" de Tanguy, Duarte-López (2007) writes:

> ***Ekphrasis on "The Fear" of Tanguy*** is a representation through music of ideas that depart from the work *La Peur* by surrealist painter Yves Tanguy. The painting depicts a white stone block standing amidst a gray desert under a luminous and ethereal pale red sky. Two towering mountain peaks made up of a conglomerate of angular, amorphous, and somewhat menacing – or perhaps frightened – objects frame our view. The strangeness portrayed by the encounter between these objects and the rather symmetrical stone block brings our attention to the multiple conditions that confront us on our own disposition or predisposition to human interaction.

According to this note, the narrative of the piece is based on a personal impression of a painting translated into music, which consolidates the whole form of the piece. Moreover, the visual impression of the painting also creates the dramaturgical idea. Hence, the piece is strongly attached to extramusical content that provides the sense and structure. Although the piece consists of seven parts named *escenas* (scenes) that are titled according to a certain feeling, situation, or abstract state, the structure of the piece works as a macro-form where all the scenes are connected one by one.

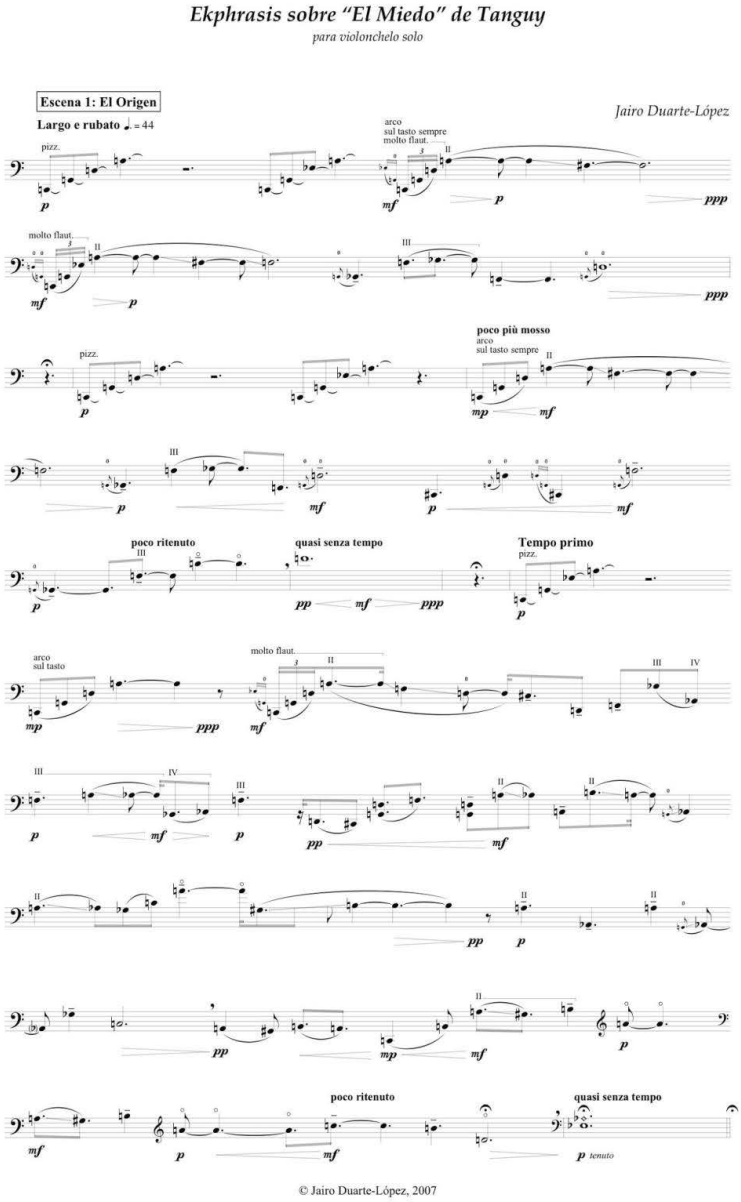
Regarding rhythm and tempo, in general the work shows a constant variation within these two elements. For instance, throughout the piece the rhythmic character oscillates between simple and complex time signatures such as 3/4, 5/8, and 9/16, among others. Nevertheless, a proportional rhythmic procedure is displayed in some of the *Escenas,* suggesting a sort of open phrasal rhythm

instead of a completely measured one. In addition, the systematic treatment of tempo clarifies not only rhythmic aspects but also contributes to achieving certain issues of musical expression, such as phrasing, articulation, and intensity.

On the other hand, the piece uses traditional cello techniques and incorporates certain extended playing techniques. This creates special timbral contrasts that are connected to the main programmatic idea. The presence of different colours that arise from the combination of different techniques and sonorities creates a sort of visual element to the piece. Namely, the composer not only uses musical form but also timbre to translate into music his own view of the painting. The following analysis therefore intends to emphasise the most striking features related to timbre within each *Escenas.*

Escena 1: El Origen (Scene 1: The Origin)

This part consists of two timbral planes that constantly interact independently. However, in some passages the juxtaposition of the two planes and the addition of certain playing techniques and shifts in register generate a sort of third timbral plane. The first plane is bright and is represented mainly by resonant open string sounds and natural harmonics. The second is based on pressed-string-bowed sounds, which are rather dark. The third is generated for instance by using *molto flautando* in *sul tasto* within open string passages, which produces a sort of neutral sonority. These create a timbral atmosphere where bright and dark sonorities find a convergent point (see Ex. 4.26).

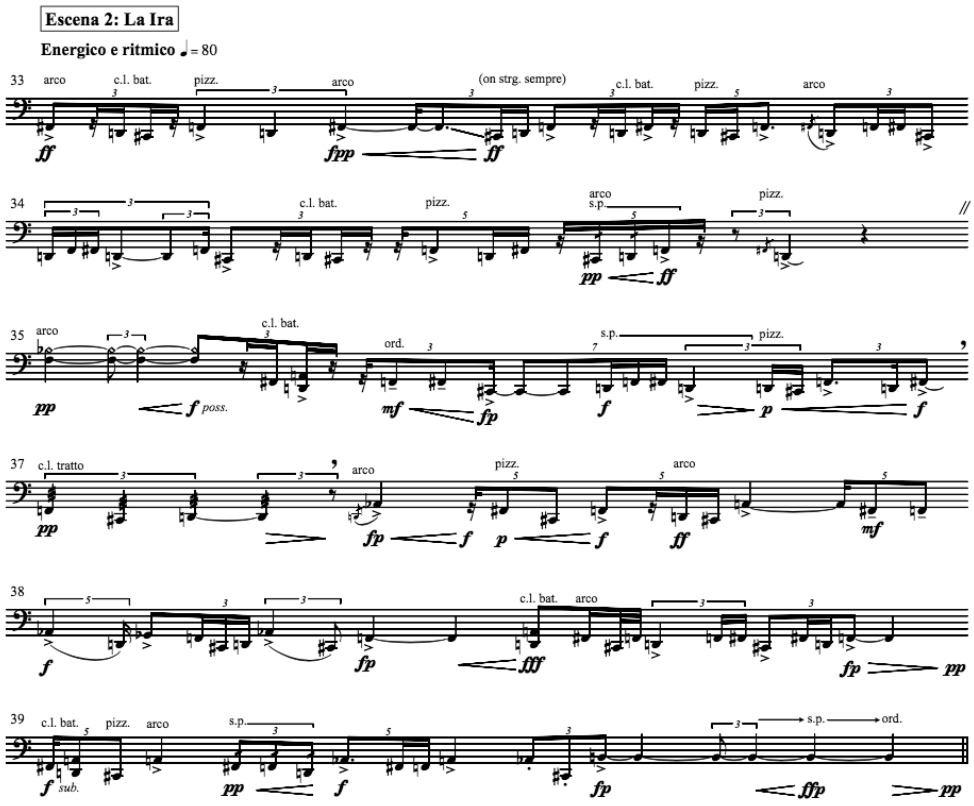


Ex. 4.26. *Ekphrasis sobre "El Miedo" de Tanguy (El Origen)* by Duarte-López (2007: 1), mm. 1–32.

Escena 2: La Ira (Scene 2: The rage)

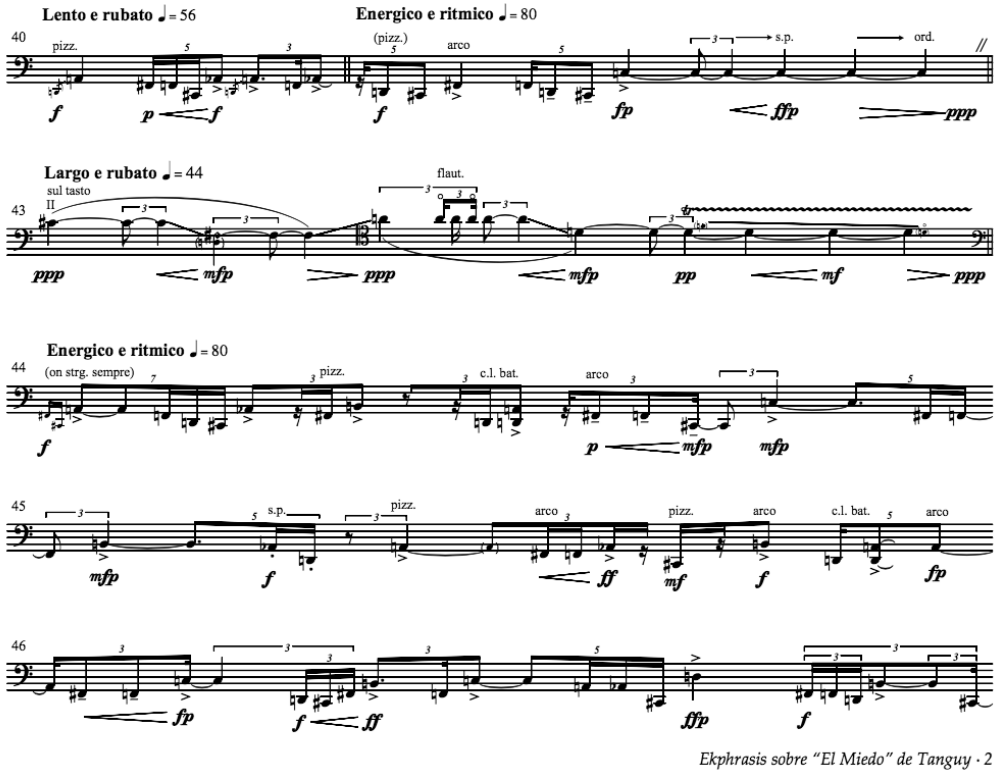
The most striking features of this section are a polytimbral development and a systematic treatment of the tempo; this not only highlights the polytimbral development but also enriches the musical expressivity.

The first part of this scene is marked with the tempo indication *Energico e rítmico* and requires the use of different techniques such as *arco*, *col legno battuto*, *pizzicato*, *sul ponticello*, *col legno tratto*, *tremolo*, and artificial harmonic sounds, among others, interacting together. This presents a complex polytimbral development and a timbral polyphony. The latter occurs in certain cases where precise articulations permit a sort of superimposition generated mainly by resonance (see Ex. 4.27).



Ex. 4. 27. *Ekphrasis sobre "El Miedo" de Tanguy (La Ira)* by Duarte-López (2007: 2), mm. 33–39.

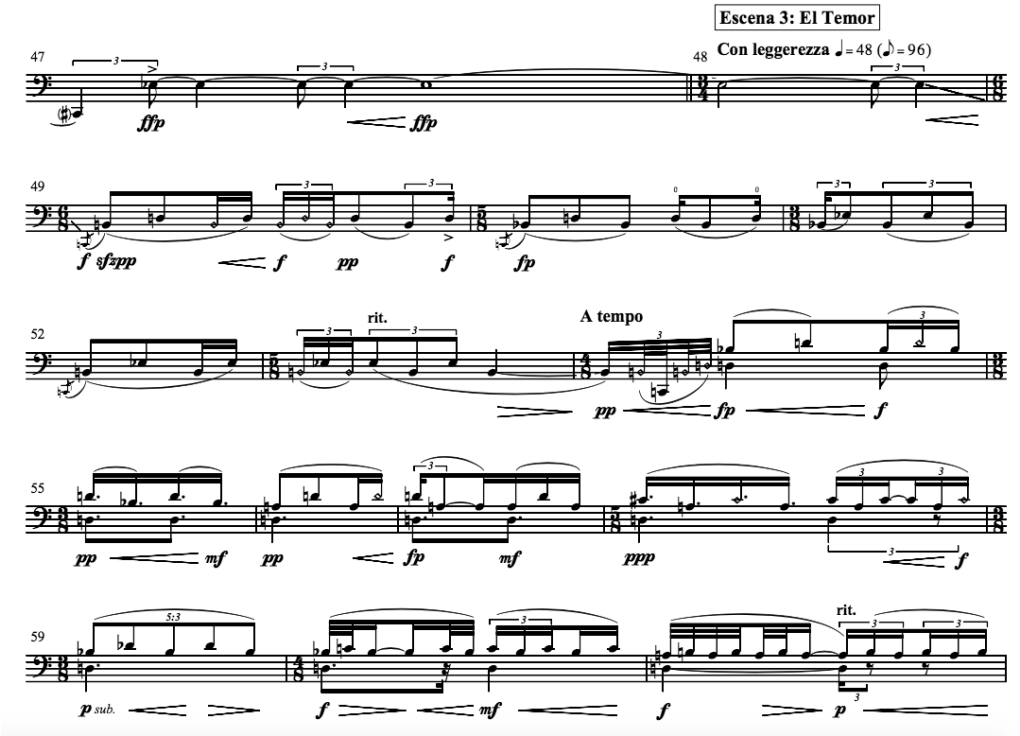
From the second part of scene 2 and until the end of it, the piece presents constant tempo changes that are accurately synchronised with the timbral variety. Hence, these passages are clear examples of an interaction between musical expression and timbral development. For instance, the first Lento e rubato passage at bar 40 is treated with a pizzicato passage in the low register, which achieves depth and resonance. The next phrase is marked Energico e rítmico, suggesting a rapid change from pizzicato to arco that leads to a timbral modulation (arco ordinario-sul ponticello-arco ordinario). Furthermore, the two tempo change indications continue to alternate until the end of the scene, adding more timbral qualities such as arco sul tasto, flautando, and trills (see Ex. 4.28).



Ex. 4.28. *Ekphrasis sobre "El Miedo" de Tanguy (La Ira)* by Duarte-López (2007: 2), mm. 43–46.

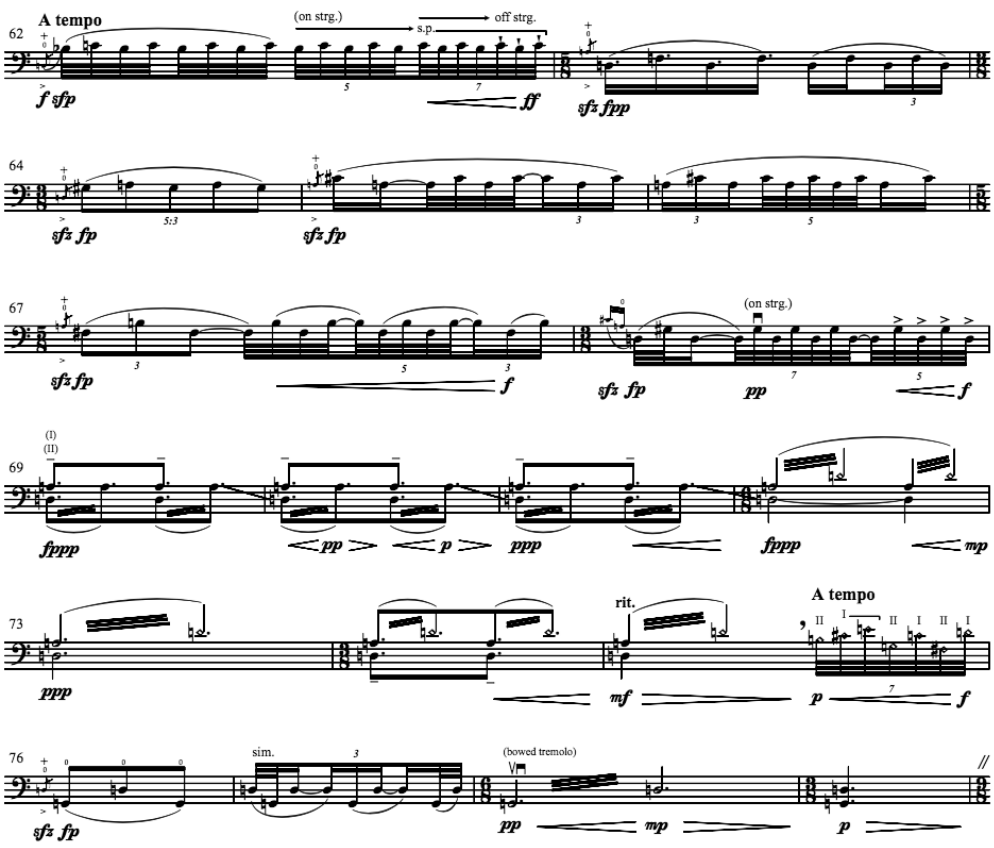
Escena 3: El temor (Scene 3: The fear)

This scene opens with a descending *glissando* that somehow represents the introduction of a double timbral passage that includes ordinary pressed sounds and artificial harmonics. Later, the use of double stops increases the polyphonic treatment of the timbre, leading to passages where an open string sound, pressed sounds, and an artificial harmonic sound create a sort of juxtaposition of different timbres (see Ex. 4.29).



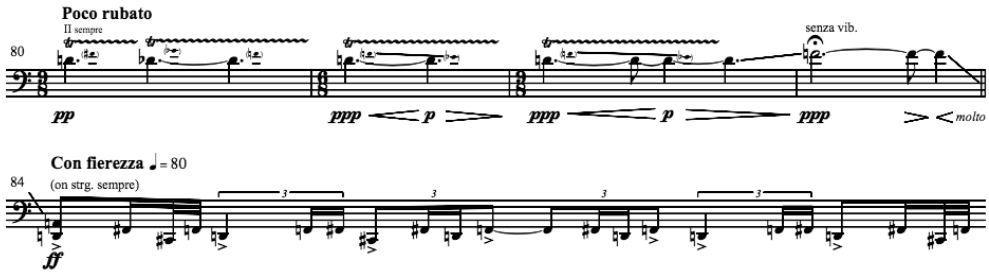
Ex. 4.29. *Ekphrasis sobre "El Miedo" de Tanguy (El Temor)* by Duarte-López (2007: 3), mm. 48–61.

Moreover, within *scene 3* timbral modulations, left-hand *pizzicati* on an open string, and trills between pressed sounds and artificial harmonics keep the polyphonic intention but this time creates a sort of succession of different timbral materials (see Ex. 4.30.).



Ex. 4.30. *Ekphrasis sobre "El Miedo" de Tanguy (El Temor)* by Duarte-López (2007: 3), mm. 62–79.

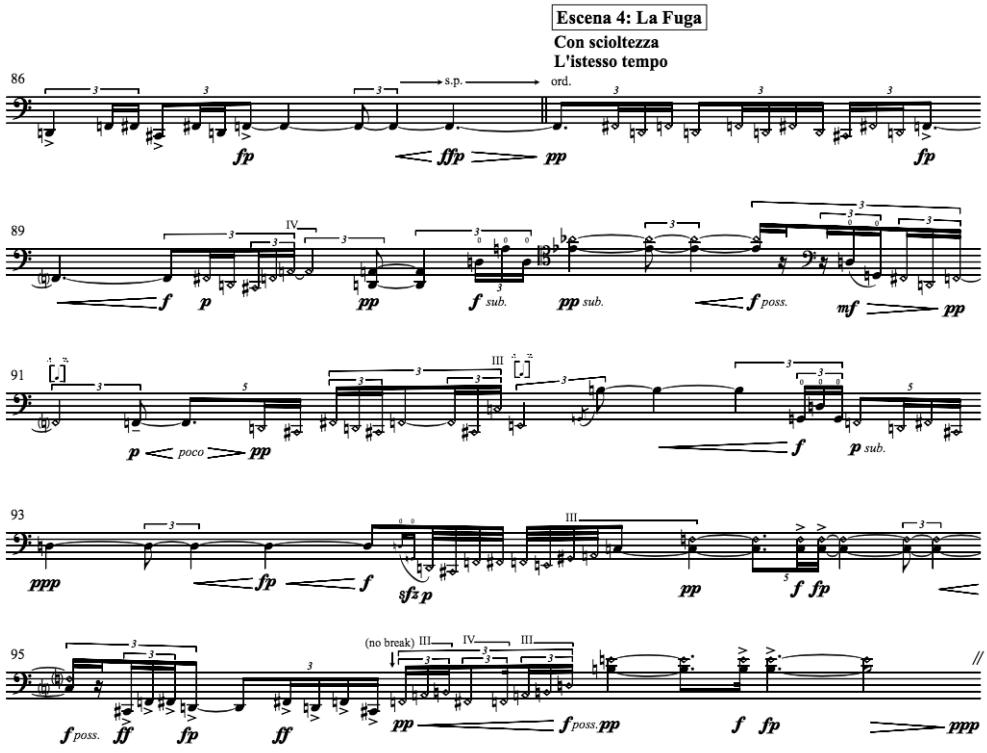
Towards the end of this scene and in the previous passage, the use of contrasting dynamic ranges, crescendos, and decrescendos add different spatial planes that enrich the timbral properties of each block of sound (see Ex. 4.31.).



Ex. 4.31. *Ekphrasis sobre "El Miedo" de Tanguy (El Temor)* by Duarte-López (2007: 4), mm. 80–84.

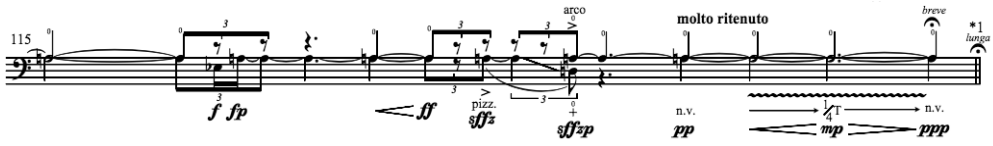
Escena 4: La fuga (Scene 4: The flee)

This scene presents a significant timbral feature that generates a sort of duality concerning pitch. According to Duarte-López (2007), "*Scene 4* contains gestures or passages of fast notes that fluctuate between «ghost» harmonics, which may not produce a precise tone, and natural harmonics which should, whenever possible." In other words, a *disengagement* from pitch hierarchy creates not only a new timbral element but also emphasises a timbral contrast within the scene (see Ex. 4.32).



Ex. 4.32. *Ekphrasis sobre "El Miedo" de Tanguy (La Fuga)* by Duarte-López (2007: 4), mm. 87–95.

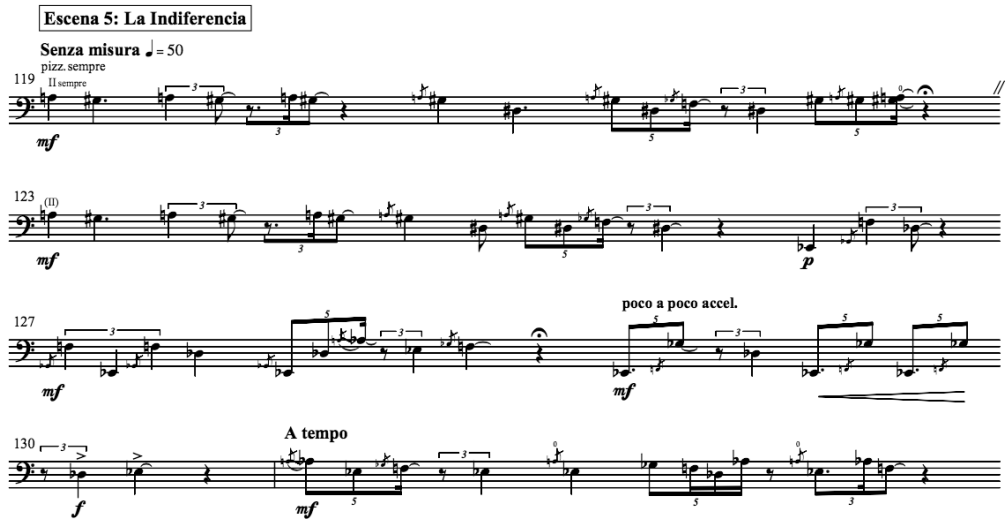
Another remarkable feature within *scene 4* is the introduction of a microtonal element that will be developed later during *scene 6*. This element produces a quarter-tone oscillation in a double-stopped unison (see Ex. 4.33).



Ex. 4.33. *Ekphrasis sobre "El Miedo" de Tanguy (La Fuga)* by Duarte-López (2007: 5), mm. 115–118.

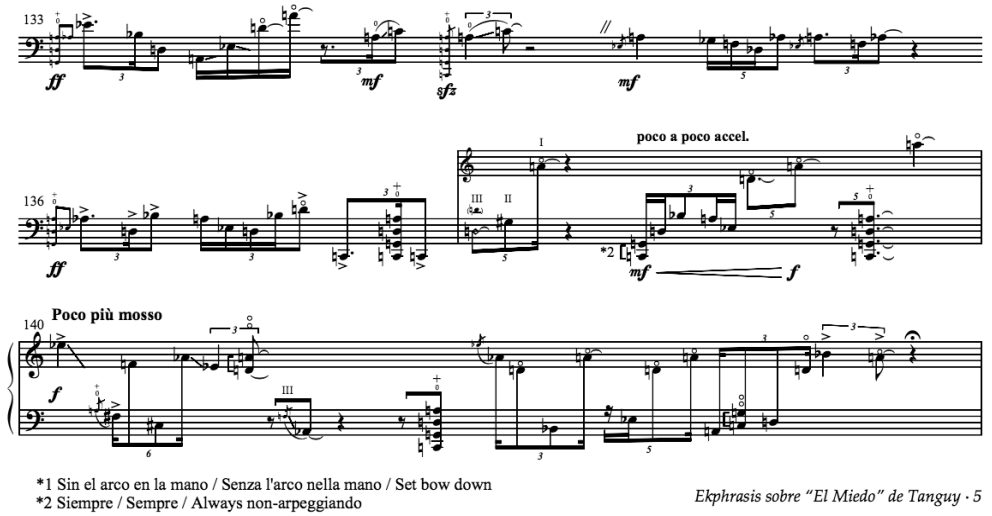
Escena 5: La Indiferencia (Scene 5: The indifference)

This part requires entirely a systematic use of *pizzicato* that produces different timbral planes and generates timbral juxtapositions by resonance. For instance, the beginning of the scene shows the interaction between pressed and open string *pizzicati* with different articulations and resonance suggestions (see Ex. 4.34).



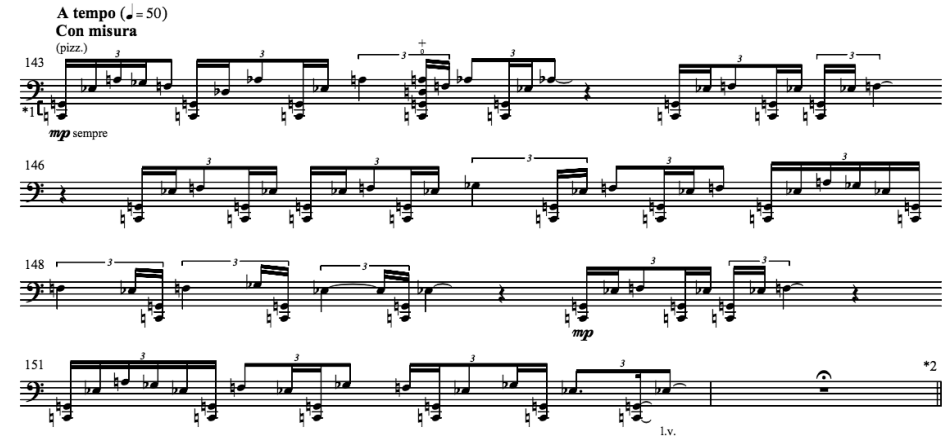
Ex. 4.34. *Ekphrasis sobre "El Miedo" de Tanguy (La Indiferencia)* by Duarte-López (2007: 5), mm. 119–132.

Another type of *pizzicato* used during this scene is the *arpeggiando* when more than three notes appear. This technique should be executed with left hand and the resonance lingers until it naturally disappears. Additionally, this scene shows passages where ascending and descending *glissandi* are added to single *pizzicato* and resonant *pizzicati* within natural harmonics. Such timbral treatments in this scene clearly show a percussive element carefully developed and constantly transformed, which confirms the idea of re-instrumentation and connects the musical discourse with the programatic idea of the entire piece (see Ex. 4.35).



Ex. 4.35. *Ekphrasis sobre "El Miedo" de Tanguy (La Indiferencia)* by Duarte-López (2007: 5), mm. 133–142.

Towards the end of this scene and from the previous musical example, another type of *pizzicato* is required. The composer provides two footnotes to precisely indicate not only the sound to be produced but also the execution. Moreover, this passage emphasises more the percussive character sought in the cello, due the combination of different *pizzicato* techniques with a stillness in the dynamic range within the low-middle register (see Ex. 4.36).



Ex. 4.36. *Ekphrasis sobre "El Miedo" de Tanguy (La Indiferencia)* by Duarte-López (2007: 6), mm. 143–153.

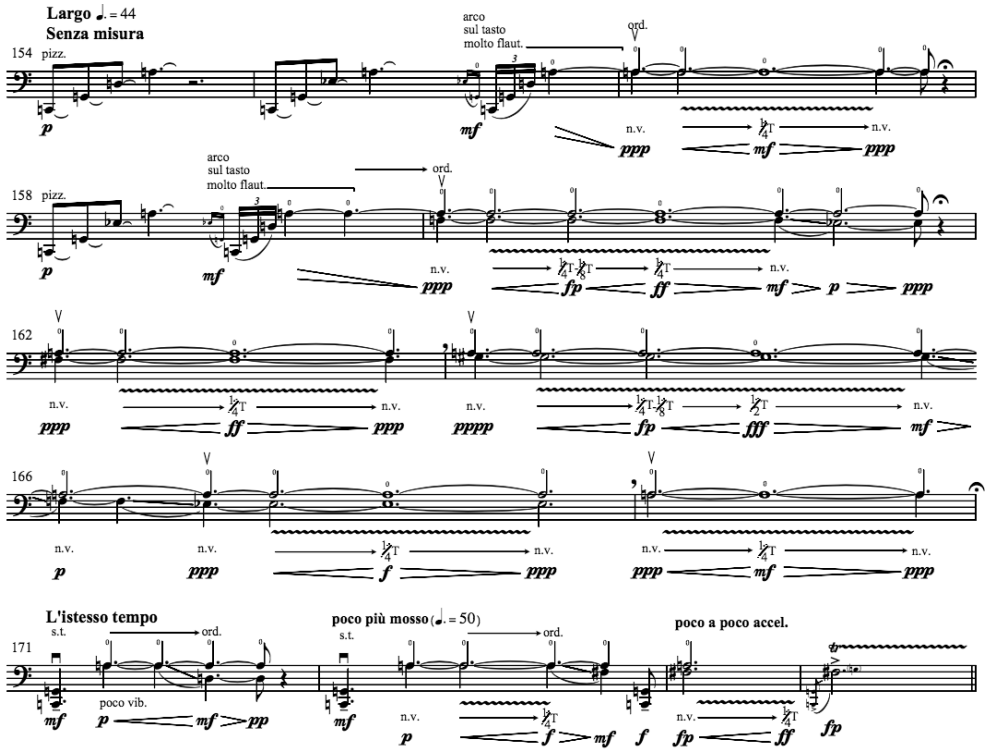
Escena 6: El Tiempo Inmóvil (Scene 6: The still time)

The most striking feature of this scene is the use of microtonal oscillations. The composer suggests three different types, indicated in the notation explanations at the beginning of the score (see Ex. 4.37).

1/2T	oscilación de medio tono / half tone oscillation
1/4T	oscilación de cuarto de tono / quarter tone oscillation
1/8T	oscilación de octavo de tono / eighth tone oscillation

Ex. 4.37. *Ekphrasis sobre "El Miedo" de Tanguy* by Duarte-López (2007: 1)

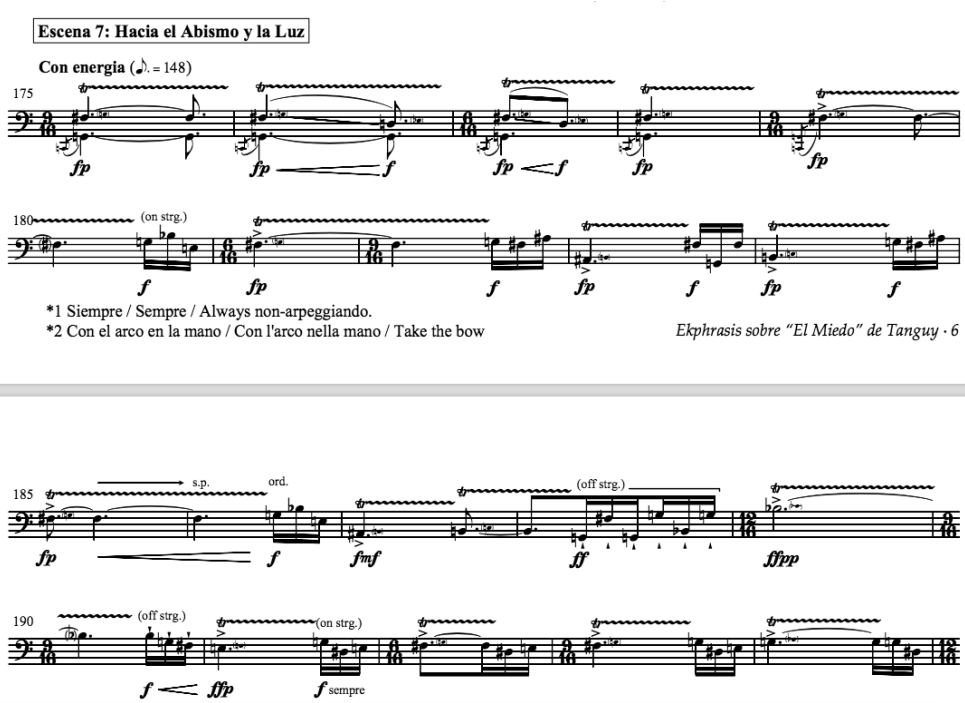
Furthermore, within the scene such microtonal treatment is used mostly in double stops, where there is a stable pedal in the note A (open string). Oscillations are within unison and close descending intervals. This pitch organisation and variation of dynamic range within the passage generates not only a bright sonic characteristic that contrasts with the *pizzicato* but also different spatial planes (see Ex. 4.38).



Ex. 4.38. *Ekphrasis sobre "El Miedo" de Tanguy (La Indiferencia)* by Duarte-López (2007: 6), mm. 154–174.

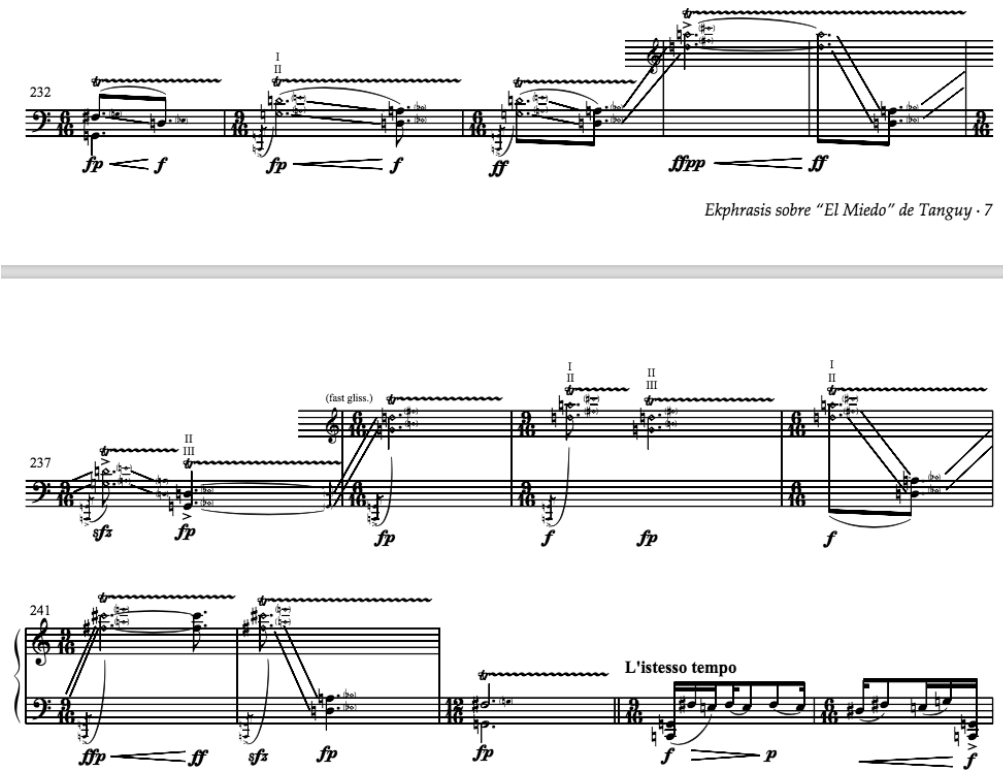
Escena 7: Hacia el Abismo y la Luz (Scene 7: To the cliff and the light)

The last scene of the piece opens with a passage in trills that present different spatial planes carefully achieved through sudden changes of dynamic range. Furthermore, a timbral modulation (*modo ordinario-sul ponticello-modo ordinario*) is added, generating another sound layer in the passage (see Ex. 4.39).



Ex. 4.39. *Ekphrasis sobre "El Miedo" de Tanguy (Hacia el Abismo y la Luz)* by Duarte-López (2007: 7), mm. 175–194.

After the passage in trills, the piece develops a sort of ostinato based on rhythmic patterns used in Andean Colombian music styles, such as *bambuco* and *pasillo*. However, this passage is presented within traditional cello techniques, which seem to function as a preparation for the most significant and new timbral gesture of the piece. Such a gesture clearly constitutes the climax of the entire work and shows an extreme use of different techniques superimposed. The passage includes trills and *glissandi* in double stops using artificial harmonics and covers the entire range of the instrument. Furthermore, radical changes in dynamic range continue to emphasise the intention of the composer in generating different timbral and spatial planes (see Ex. 4.40).



Ex. 4.40. *Ekphrasis sobre "El Miedo" de Tanguy (Hacia el Abismo y la Luz)* by Duarte-López (2007: 7, 8), mm. 232–245.

Ekphrasis on "The Fear" of Tanguy presents ideas of timbral polyphony, re-instrumentation, and polytimbral procedures, among others, and constitutes a clear example of the remarkable timbral development in the Colombian solo cello repertoire of the 21st century.

4.2.5. *TÁNTALUT* by Violeta Cruz

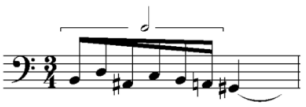
This work was composed in 2007 in Bogotá and was part of the bachelor studies of the composer at Javeriana University with Hárold Vázquez. At that point Cruz started an investigation on bowed-strings writing, which consisted of an analysis of pieces for string ensembles and a direct involvement with the instruments. Besides the compositional approach mentioned above, *TÁNTALUT* also included an experimental compositional process based on improvisation. According to the composer:

> […] Borrowing a cello allowed me to improvise some passages. Furthermore, in the beginning of the compositional process I wrote various short gestures that I began to develop. Then I selected those ones in which the development generated more interesting results, choosing a formal strategy where some gestures would make sense in front of the others (Interview IV: 1).

After finishing the piece, Cruz gave it the name *TÁNTALUT* based on a sonic idea that represented to her a story of Greek mythology. Nevertheless, even if the name refers to an extramusical idea, the compositional process was not inspired by it. Regarding this matter, Cruz claims:

> The title of the piece was given after the piece was done. The lowest C in the cello is a sort of weight, a gravity center in which a motive falls insistently until the end of the piece. The energy of each fall makes me think of the satisfaction after releasing a wish that was repressed for a long time, a kind of liberated doom. I thought of Tantalus sun on Zeus, punished by the gods and condemned to be eternally hungry, thirsty and afraid to be swatted by a rock. At the end of my piece Tantalus is constantly swatted by that rock; death liberates him from his dissatisfaction (Interview IV: 2).

TÁNTALUT displays a contrasting treatment of tempo and constant changes of time signature. Furthermore, a stretching and expanding time effect is present within the entire piece and is evident not only in the use of a rhythmic cell that recurrently appears and develops within different acceleration indications (see example 4.41.) but also through four different temporal gestures:



1. Aceleración en el tiempo indicado

Ex. 4.41. *TÁNTALUT* by Cruz (2007: *Convenciones*).

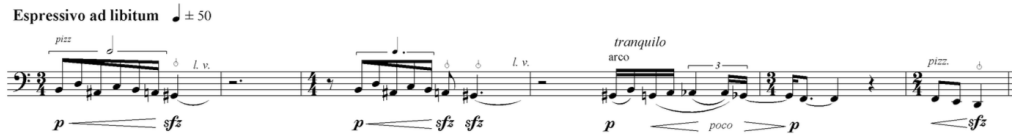
Regarding other features in the compositional process of *TÁNTALUT*, the composer remarks:

> Within the piece I wanted to explore mainly the harmonics. This wish came after studying the pieces for strings by Simon Steen-Andersson, Ana Lara and Alba Triana, among others. The approach to this exploration was initially empirical, taking advantage of the fact that I had a cello available to try things out myself on it. (Interview IV: 3).

This explains the composer's sonic idea behind the exploration of an extended playing technique, in which the most striking feature is timbre, rather than pitch or rhythm. However, the two latter elements also seemed to be very important within the piece due their systematic organisation. In

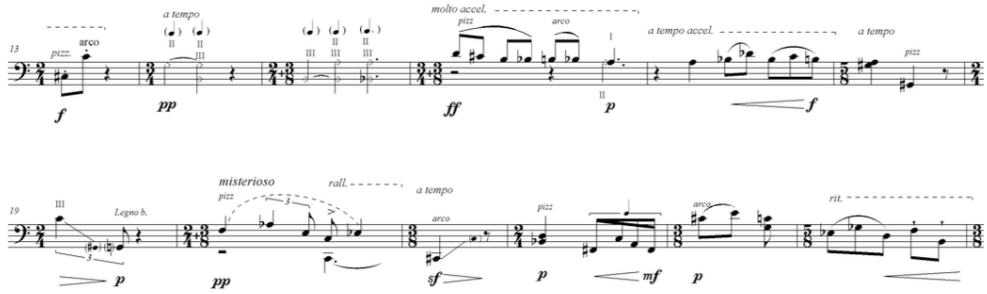
fact, the piece shows a repetitive diatonic character achieved through groups of progressions in small intervals within the low, middle, and high register. As previously mentioned, the piece displays a complex rhythmic development not only through constant changes in time signature but also suggests constant rhythmic *ostinati* that somehow are interrupted by more static passages. Both elements interact and contribute to building microstructures that provide a solid form to the piece (see musical examples below).

Timbrally, *TÁNTALUT* displays other important characteristics. For instance, the piece opens with a passage where three different techniques (*pizzicato, arco* and *Bártok pizzicato*) interact within different dynamics and articulations, which generates a polytimbral development that continues throughout the whole piece (see Ex. 4.42.).

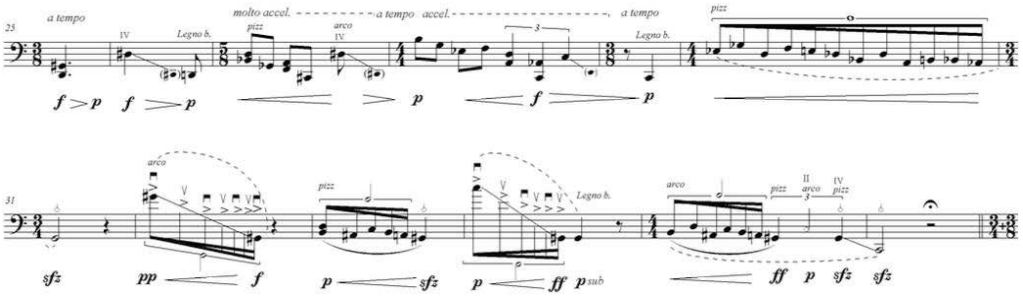


Ex. 4.42. *TÁNTALUT* by Cruz (2007: 1), mm. 1–6.

Another example of polytimbral development is seen in the following passage where harmonics, *pizzicato* techniques, *glissandi*, and *legno bat* are used with different contrasting dynamics, which also contribute to various spatial planes (see Ex. 4.43. and 4.44.).

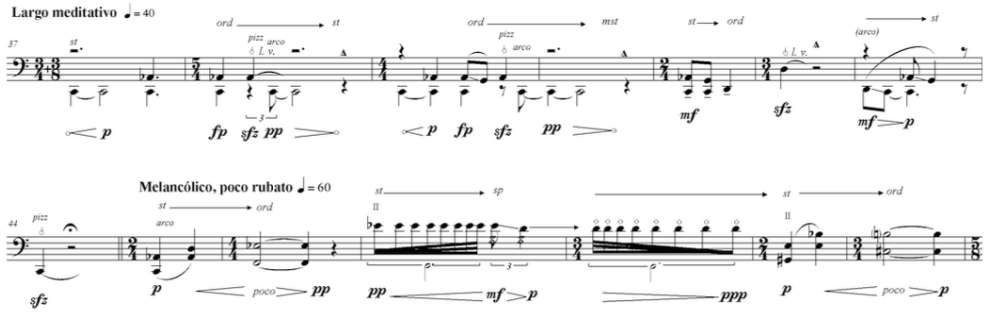


Ex. 4.43. *TÁNTALUT* by Cruz (2007: 1), mm. 13–24.



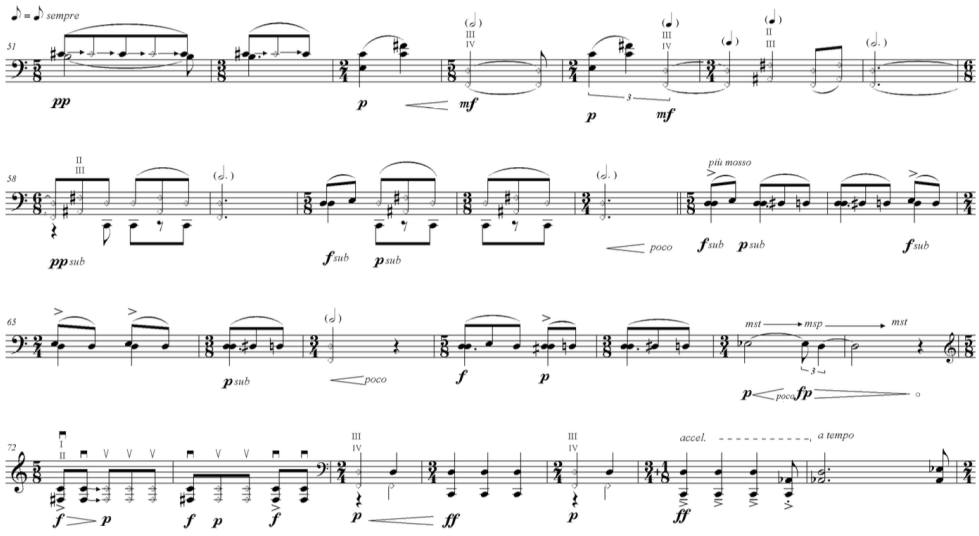
Ex. 4.44. *Tántalut* by Cruz (2007: 2), mm. 25–36.

Moreover, the composer explores in *TÁNTALUT* both gradual and sudden timbral modulations produced by shifts in the bow position, ranging from *molto sul tasto* to *sul ponticello,* sometimes juxtaposing resonant *Bártok pizzicati* (see Ex. 4.45).



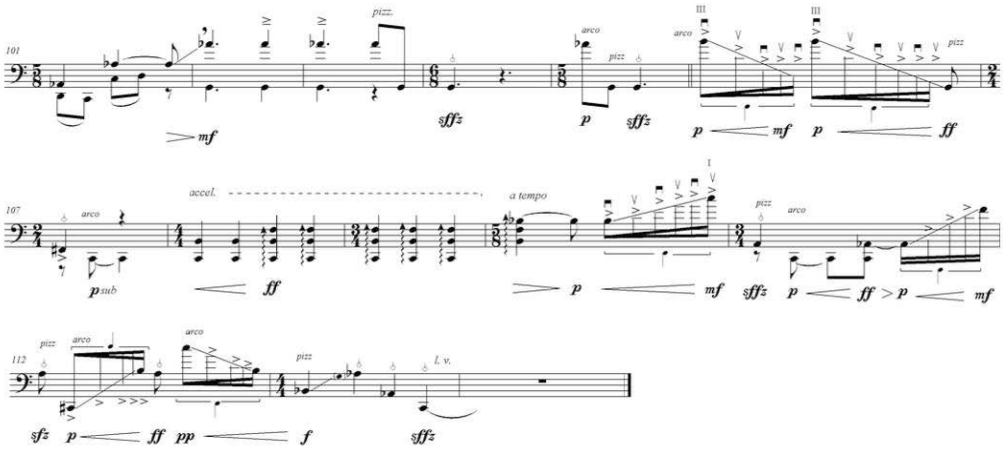
Ex. 4.45. *TÁNTALUT* by Cruz (2007: 2), mm. 37–50.

By the middle of the piece, the constant interaction between pressed and harmonic sounds in double stops generate a timbral polyphony that at the same time is enriched by the use of microtones and shifts in bow position (see Ex. 4.46.).



Ex. 4.46. *TÁNTALUT* by Cruz (2007: 3), mm. 51–78.

The last part of *TÁNTALUT* strongly displays a process of instrumental deconstruction of the cello, where a timbral re-signification and a re-instrumentation are achieved with fast and long *glissandi,* loud *Bártok pizzicato*, and aggressive chords. These techniques give the instrument a rather percussive function and generate in the passage a sonic atmosphere that is somehow disengaged from the traditional sound and techniques of the medium (see Ex. 4.47.).



Ex. 4.47. *TÁNTALUT* by Cruz (2007: 4), mm. 101–114.

Although this piece was never premiered and the composer does not consider it as a proper piece within her catalogue of works, but rather as a sort of composition exercise that led to the composition of a subsequently well-recognised work, this analysis demonstrates that *TÁNTALUT* contains remarkable elements in terms of form and timbre. Namely, the explorations in this piece can be considered as an opening door to the composer for establishing a stronger musical personality, which is present in her more recent work.

4.2.6. *Pieza para violoncello solo* by Daniel Leguizamón Zapata

This piece was composed between June and July 2008 during the composer's stay in Montevideo, Uruguay where he participated in a composition course led by Graciela Paraskevaídis (1940-2017) and Coriún Aharonián (1940-2017). However, only after an encounter with the Argentinian cellist Martin Devoto during November 2008 in Lima, Peru the composer defined in more detail certain aspects of the piece, such as the written indications in the glossary. After this collaboration, Devoto premiered *Pieza para violonchelo solo* in Buenos Aires in 2009. Nevertheless, after its premiere the piece had another revision by the Canadian cellist Emilié Girard-Charest, who collaborated with the composer on the final edition of the score (Leguizamón 2017).

The duration of *Pieza para violonchelo solo* is about nine minutes and the time of execution is indicated proportionally. Namely, it does not have time measure signatures or strict tempo changes but time is defined through sound and silence sections divided in bars, each lasting approximately one second.

Regarding the structure and the musical discourse of the piece, the composer states:

> This piece was one of the first in which I worked with symmetry consciously (something that before was there implicit but after became recurrent). This can be proved looking at the durations of the sound and silence segments that from the middle part of the piece onward are inverted but keep the same sequence of durations. On the other hand, in terms of *tempo* there is an interest in superimposing temporal "planes" (one is represented by what is played with bow and the other by what is played with *pizzicato*), that suggest contrast within an "objective" regularity and a subjective perception of time. This tension I found important. And at the same time it helped me to define the form of the piece emphasising certain rhetorics through the *pizzicato* gesture, which appears in the beginning and at the same time closes the piece. […] (Interview V: 1).

The symmetric development and the temporal treatment that the piece employs generates a static atmosphere, which is constantly emphasised by the use of long gestures in the same pitch. Furthermore, although the *pizzicato* events stop the sort of pedal effect, the articulations implied with such events do not interrupt the static time perception. For instance, the composer indicates in the glossary that except for the last one, all *pizzicato* events in the piece should be played with the left hand, *p*, with a *dry* sound, and avoiding resonance. He therefore suggests to the performer

to mute the string by placing the index finger next to the nut and suggests pressing the string slightly after plucking to muffle the sound.

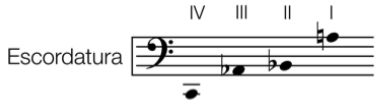
Unlike other cello pieces by Colombian composers that show a strong connection with extramusical ideas or an important link to different art disciplines, or both, *Pieza para violonchelo solo* intended to leave an individual aesthesic experience. According to Leguizamón:

> There is not any extramusical reference in this piece. And there is not such thing within my pieces in general. In fact, I am interested in the opposite, therefore the names of my pieces are rather plain: *Pieza para violoncello solo* (*Piece for solo cello*), *Septeto* (*Septet*), *Esquema para instrumentación indeterminada* (*Scheme for indeterminate instrumentation*), etc… I know it is a sacrifice on the poetical possibilities that music can have but in general - unless there is an interest in remaking a concrete idea - I am interested in proposing a free listening experience, which is not linked to my personal subjective motivations. It does not mean that I do not want the listeners to enjoy the music (in case they do) in a sense that it goes beyond the "plastic", namely the "strictly sonic" idea. It is indeed possible that there is certain poetic in music but I believe that everyone is free to propose their own poetical experience with such or even more legitimacy than the composer's one. (Interview V: 2).

On the other hand, in terms of timbre *Pieza para violonchelo solo* is systematically treated mainly through the use of microtones in double stops, timbral modulations, and a polytimbral development, which emphasises different spatial and time planes. Namely, timbre is not only related to the sound itself but is also connected to the time and space development of the piece. Related to these ideas, the composer claims:

> Timbre, or to be more specific, acoustics in general was the main element in this piece. Concretely, the sound that comes up from the oscillation is the one where the whole piece is developed from. Therefore I used that specific tuning, those microtones, that treatment of the double stops, and all the rest of the details. […] Timbre turned out to be a way of remarking contrasts that in other contexts were subtle. (Interview V: 3).

The following analysis therefore examines in detail the timbral development of the piece and other significant features that in one way or another are connected to the use of extended playing techniques and the idea of timbral re-signification. First of all, *Pieza para violonchelo solo* requires a specific *scordatura* tuning on the second (a minor third lower) and third string (a minor second lower) to facilitate the execution of the microtonal oscillations throughout the piece (see Ex. 4.48).

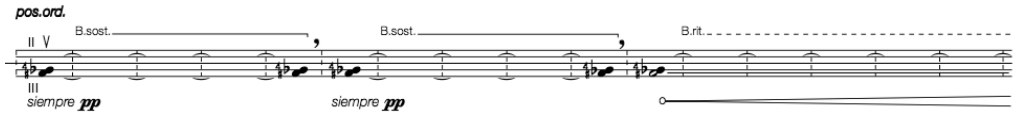


Ex. 4.48. *Pieza para violoncello solo* by Leguizamón (2009: 1).

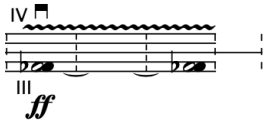
The composer suggests a quarter tone and a three-octave tone up to the note A, both to be played on the third string (see Ex. 4.49).

Ex. 4.49. *Pieza para violoncello solo* by Leguizamón (2009: *Notas de ejecución*).

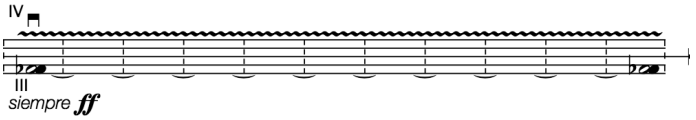
The microtonal oscillations are always produced by juxtaposing one pressed sound and one open-stringed sound that remain on the same pitch as a sort of pedal. However, there are two ways of achieving the oscillations within the piece: by different pitch operations that include the use of *glissandi,* which emphasise the pitch control and the oscillation velocity, and by using *vibrato* on the pressed sound of a double-stop unison. The latter appears only in two passages of the piece and it is highlighted by requiring *ff* on the gesture (see Ex. 4.50, 4.51a and 4.51b.).



Ex. 4.50. *Pieza para violoncello solo* by Leguizamón (2009: 1).

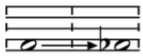


Ex. 4.51a. *Pieza para violoncello solo* by Leguizamón (2009: 1).



Ex. 4.51b. *Pieza para violoncello solo* by Leguizamón (2009: 2).

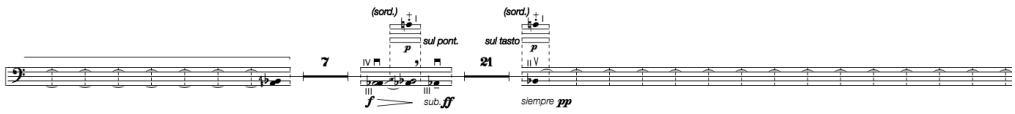
Furthermore, in the glossary of the piece (*notas de ejecución*), Legizamón clarifies in detail to the performer the intention of the *glissandi* and the way it should be controlled depending on the velocity of the oscillation, which is proportional to the distance between the microtones. There are thus three different types of microtonal oscillations suggested, which interact with specific gestures, namely 1) Regular (*B. sost*): Here the performer should keep the oscillation stable, hence there is not use of *glissando*; 2) Slowed down (*B. rit*): In this one the oscillation decelerates through an up-pitched *glissando,* which shortens gradually the distance between the microtones; and 3) Speeded-up (*B. accel.*): The oscillation accelerates using the opposite process and the distance between the microtones increases (see Ex. 4.52 and 4.53).



Ex. 4.52. *Pieza para violoncello solo* by Leguizamón (2009: *Notas de ejecución*).

Ex. 4.53. *Pieza para violoncello solo* by Leguizamón (2009: *Notas de ejecución*).

In addition to the systematic microtonal treatment, *Pieza para violoncello solo* also presents an organised use of timbral modulations and an important polytimbral development. These characteristics affect both the sonic and spatial features in the musical discourse, which are achieved throughout the piece via different articulations and techniques. For instance, the composer often requires within the piece sudden changes in bow positions (*sul tasto, pos. ord and sul pont*.) from one gesture to another. This generates three contrasting timbral characteristics, namely dark, bright, and somewhat metallic; these characteristics interact constantly with each other due to its organisation. In general, the dark and metallic characteristics are used in the static single pitches and the bright characteristics are used in the microtonal gestures. Furthermore, the muted left-hand *pizzicato* adds another layer to the timbral development (see Ex. 4.54.).



Ex. 4.54. *Pieza para violoncello solo* by Leguizamón (2009: 2).

In conclusion, timbre constitutes the primary material of this work. Namely, it is certainly the most significant element that not only defines the timbral development of the piece but also its form and its temporal and spatial treatment.

4.2.7. *3 piezas A-formales/3 A-formal pieces* by Sergio Andrés Castrillón Arcila

This work combines traditional and graphic notation and is structured in three pieces (*#1, #2*, and *#3*) that should be played always together. On the other hand, this work can be performed with or without amplification and with a gentle reverb effect. The duration is 11'22'' and its only recording until now was with Manuel Estrada at the Centro Cultural Recoleta's music studio in Buenos Aires in January 2009.

The compositional process of *3 piezas A-formales* was based on a pedagogical idea that attempted to stimulate the creativity of the performers and to introduce them to more complex personal notation styles that can bring different challenges while studying the piece and during its performance. In other words, this work was conceived to take the cellist to a place where investigation and instrumental deconstruction are key concepts to experience radical ways of reading and performing solo cello music. These purposes are in a way connected to some features seen in solo cello pieces by Lachenmann, Xenakis, and Toledo, among others, where the performers are encouraged to learn how to play their instruments in other ways that many times are even unimagined.

The writing style of the score of *3 piezas A-formales* was strongly influenced by visual arts and experimentalism. In fact, the use of colored ink and personal graphic conventions in hand-written scores became increasingly present in the composer's work after 2010. A sort of draft score[40] style that clearly shows an interest in both graphic and sound "mistakes" and chance operations was also highlighted increasingly in the composer's new pieces (see graphics below). This tendency traces a second phase in the composers' career, where several pieces for solo instruments are connected to improvisation and influenced by other disciplines such as theater, literature, dance, and sound art. On the other hand, although the name of the piece represents a conceptual word game of the Spanish word *amorfo,* which means without form, there is certainly a formal base consisting of variations of an ABAC form. For example, piece *#1* is organised in four parts (A, B,

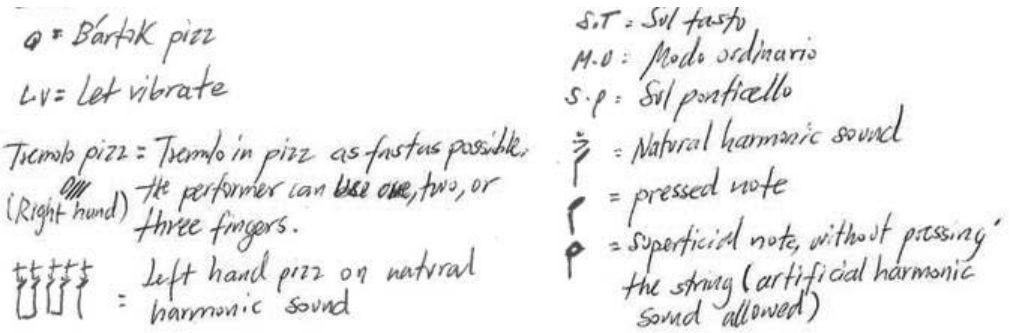
[40] Intentionally, this score was never re-written on sheets other than the original ones. Therefore, there are typos, leaned-crooked staves, and other corrections that are part of the piece itself.

B+A and A), piece *#2* contains five parts (A, A1, B, C, and A), and piece *#3* has two parts (A and B). Moreover, each part has its own specific sonic attributes, which indicates that there is also an intention of constantly merging timbre and form within the compositional discourse (see more in the analysis below).

Regarding time and tempo, *3 piezas A-formales* is written using a proportional treatment that requieres the performer to use a stopwatch as a time guide. Namely, the pieces do not have time signatures and time is organised by phrases and gestures that should fit into an indicated time frame (1 minute, 2 minutes, etc). Moreover, the suggestions of expression are connected to a personal perception of time within the pieces. For instance, the performers should interpret in their own way indications such as *lontano,* fast, or relaxed to establish the tempo.

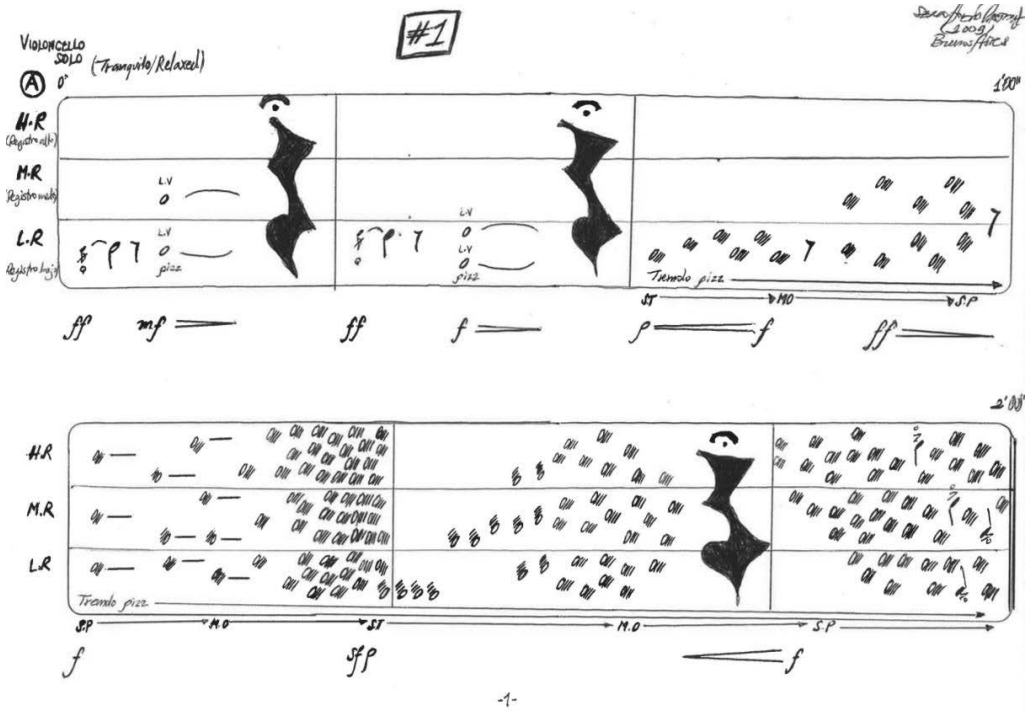
Within the three pieces all pitches must be chosen by the performer. However, the indications of the different registers to be used should be followed precisely (H.R: High register, M.R: Middle register, and L.R: Low register), due the fact that according to the position of the gesture, each register has in itself different high, middle, and low regions. The cellist can also decide and practice on a specific pitch set or even not decide it at all, letting this feature be a chance procedure that creates a different sort of pitch discourse every time that the pieces are played. However, all the rhythmic organisation and dynamics must be accomplished as precisely as possible. These latter ideas show how gestural expression is more important than pitch organisation, which reveal a new perspective within the composers' work, since his previous pieces used mainly scales and set pitches.

In terms of timbre, *3 piezas A-formales* emphasises percussion and noise elements interacting together. However, each piece has its specific approach. For instance, in the glossary of piece *#1*, extended playing techniques such as *Bártok pizzicati, tremolo pizzicato, pizzicato* on natural harmonics, and percussive gestures are presented. These techniques strongly connect the elements previously mentioned; here a clear pitched sound is barely heard but rather a type of dirty percussive sound is produced (see Ex. 4.55).



Ex. 4.55. *3 piezas A-formales (#1)* by Castrillón (2009: Indications).

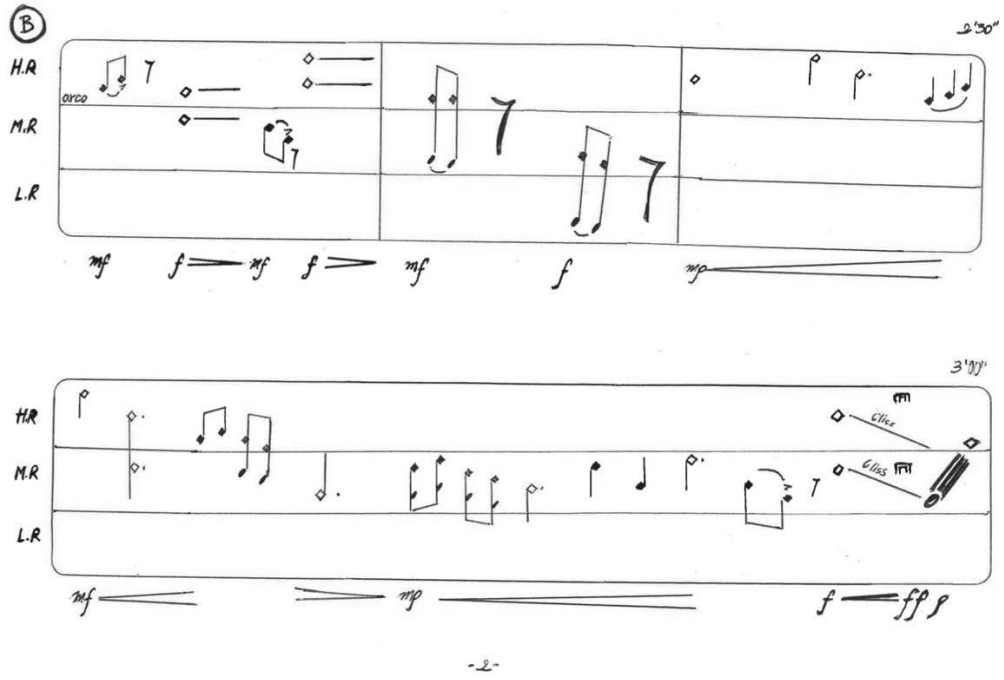
Furthermore, in piece *#1* form is strongly connected to an idea of contrast and cohesion among the different timbral features, which are represented through certain playing techniques. For example, part A includes merely right-hand *pizzicati.* However, there are three types and each one has particular timbral and expressive functions. The first gesture presents *Bártok pizzicato* used in *subito ff*, producing a strong strike. The second is a double-stopped *pizzicato* attack in *mf* and *f*. This gesture suggests a decay in volume and states an important spatial characteristic through a long resonance. Both gestures are used within the low and middle-low register. By contrast, the last is a *tremolo pizzicato* that spans both a wide register and dynamic range and follows a gradual timbral modulation through shifts in the three different positions indicated (S.T, M.O and S.P) (see Ex. 4.56).



Ex. 4.56. *3 piezas A-formales (#1)* by Castrillón (2009: 1).

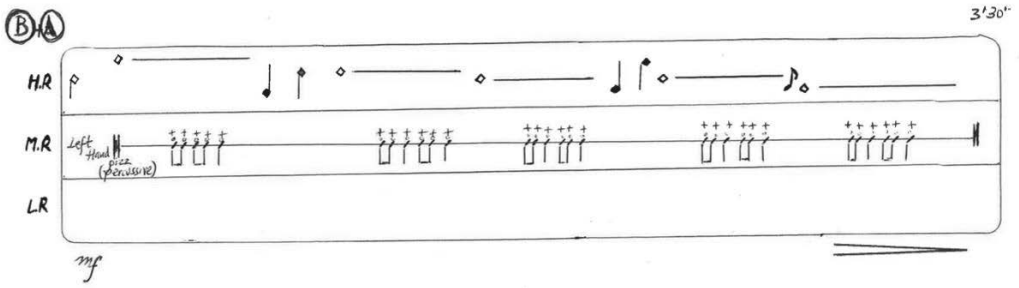
To establish a contrasting timbral and formal development after the *pizzicati* gestures, part B appears featuring non-pressed superficial notes and pressed notes with the bow. These notes interact with each other in short single and double-stopped gestures that span from low to high

register. Towards the ends of this section, a noise element is introduced by a trill (left-hand *tremolo*) articulated with bow overpressure (see Ex. 4.57.).



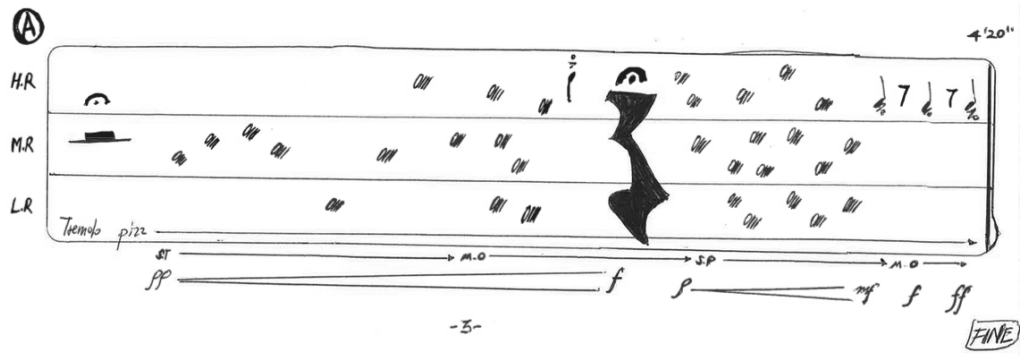
Ex. 4.57. *3 piezas A-formales (#1)* by Castrillón (2009: 2).

Highlighting the idea of cohesion between the two timbral planes seen in part A and B, part B+A presents a melodic line in both unpressed and pressed bowed sounds, juxtaposed to a rhythmic *ostinato* in left-hand *pizzicato* on a natural harmonic sound. However, the latter technique inputs a new timbral element and a formal direction to the piece. Hence, a bright and sharp percussive sound that brings both timbral variety and contrast also constitutes a new character within the narrative of the piece (see Ex. 4.58).



Ex. 4.58. *3 piezas A-formales (#1)* by Castrillón (2009: 3).

Finally, part A appears again but this time as a coda that includes the *tremolo pizzicato* and the timbral modulation (S.T, M.O and S.P) of the beginning. Nevertheless, towards the end the left-hand *pizzicato* on natural harmonic sounds (used in the previous section) emerges in different registers. Namely, the last section constitutes a sort of recapitulation that emphasises a recently introduced element (see Ex. 4.59).

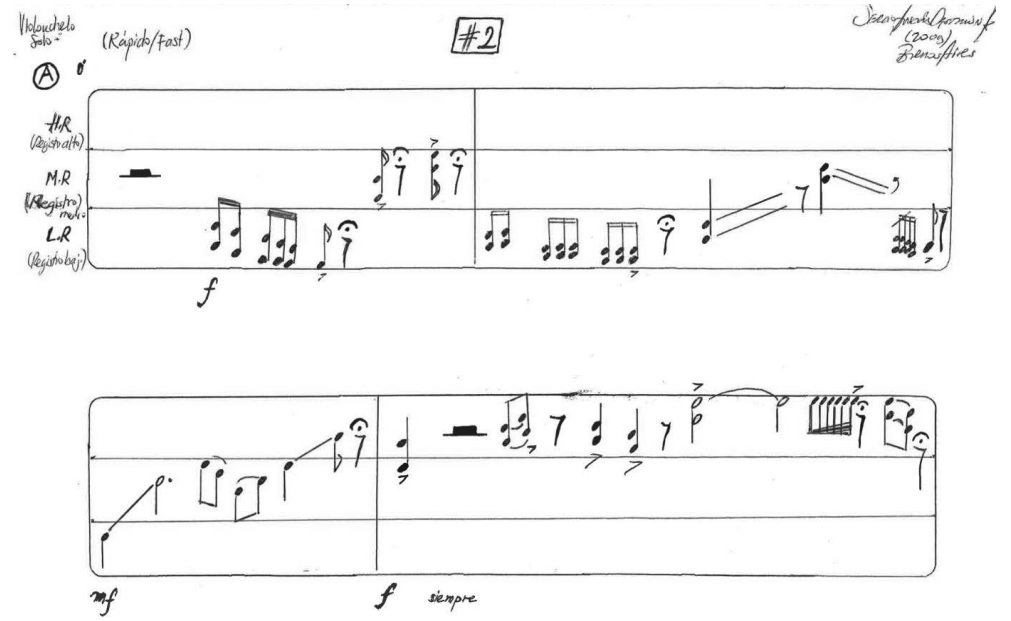


Ex. 4.59. *3 piezas A-formales (#1)* by Castrillón (2009: 3).

Piece *# 2* includes some of the techniques applied previously. The piece also requires the use of multiphonics that must be achieved by the performer using any kind of technique that generates at least three sounds simultaneously (see Ex. 4.60).

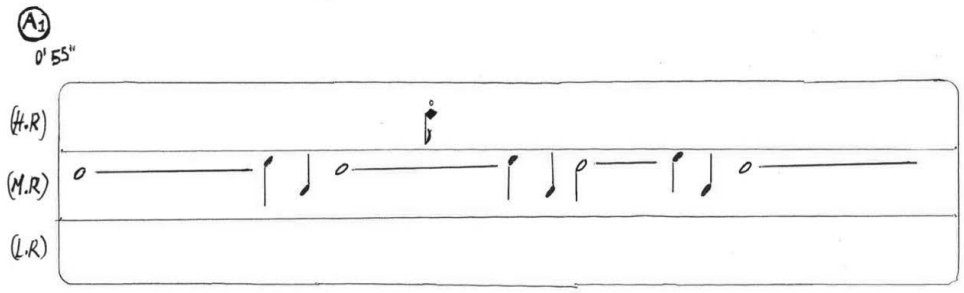
Ex. 4.60. *3 piezas A-formales (#2)* by Castrillón (2009: Indications).

The first part of this piece (A) shows varied progressions within the three registers, using mainly single and double-stopped pressed sounds. These gestures and sounds interact with accentuations in *f* and *mf* and convey the idea of a very solid cello vibrating entirely (see Ex. 4.61).



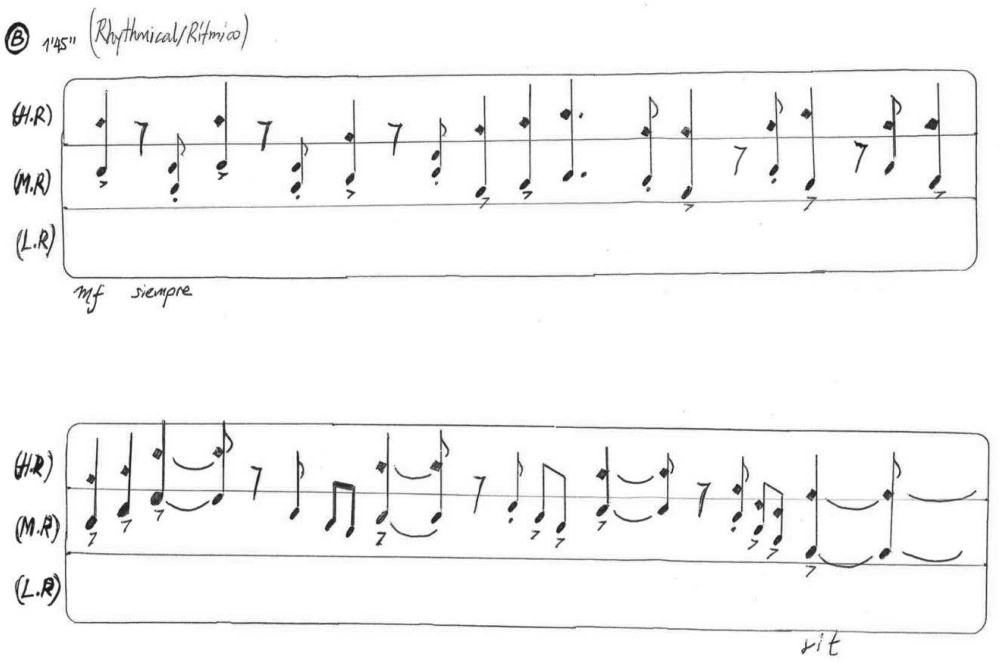
Ex. 4.61. *3 piezas A-formales (#2)* by Castrillón (2009: 1).

However, within the second part (A1) this solid cello timbre starts to be accompanied by two more elements that present contrasting timbral features. For instance, an artificial (non-pressed) harmonic appears followed by an open string *pizzicato,* forming a timbral polyphony within the passage. Furthermore, these two techniques produce a sound not only with a different timbre but also with a specific function based on the idea of re-instrumentation. For example, the harmonic is suggested in the middle region of the high register and hence has a airier sound, which intends to represent a sort of wind instrument. On the other hand, the open string *pizzicato* in the low register produces a deep percussive sound (see Ex. 4.62.).



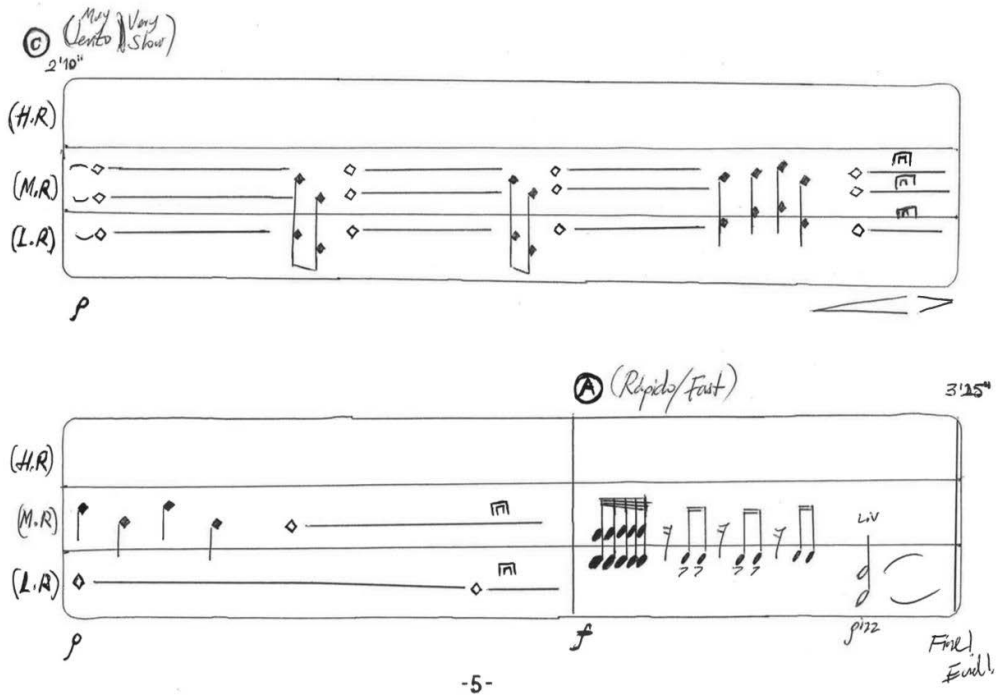
Ex. 4.62. *3 piezas A-formales (#2)* by Castrillón (2009: 2)

Part B presents a rhythmic *ostinato* where pressed and superficial sounds are juxtaposed. This passage is a counterpoint where two melodies are set, each one presenting a different timbre. Namely, the idea is to develop a sort of timbral counterpoint (see Ex. 4.63.).



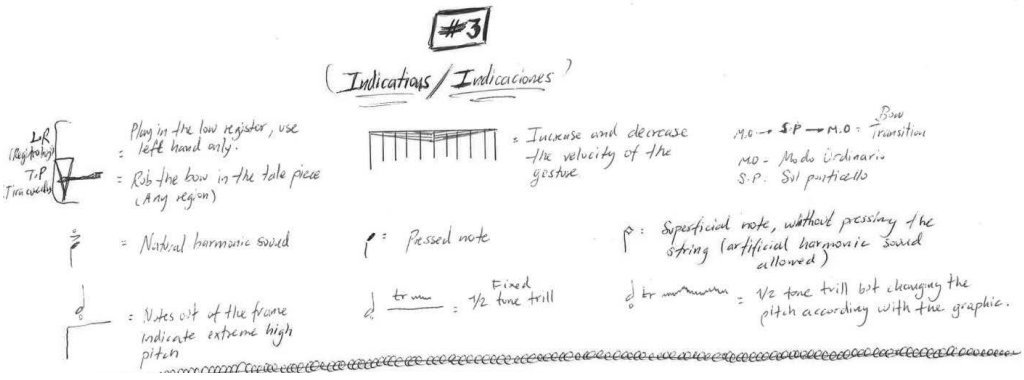
Ex. 4.63. *3 piezas A-formales (#2)* by Castrillón (2009: 4).

Part C introduces multiphonics as a development of the previous section. Namely, after the last gesture of part B the multiphonics appear interacting constantly with a double-stopped harmonic. In addition, towards the end of the section an overpressure is required to turn the sound of the multiphonics into a noise passage that leads to a re-exposition of the main cell of part A (see Ex. 4.64.).



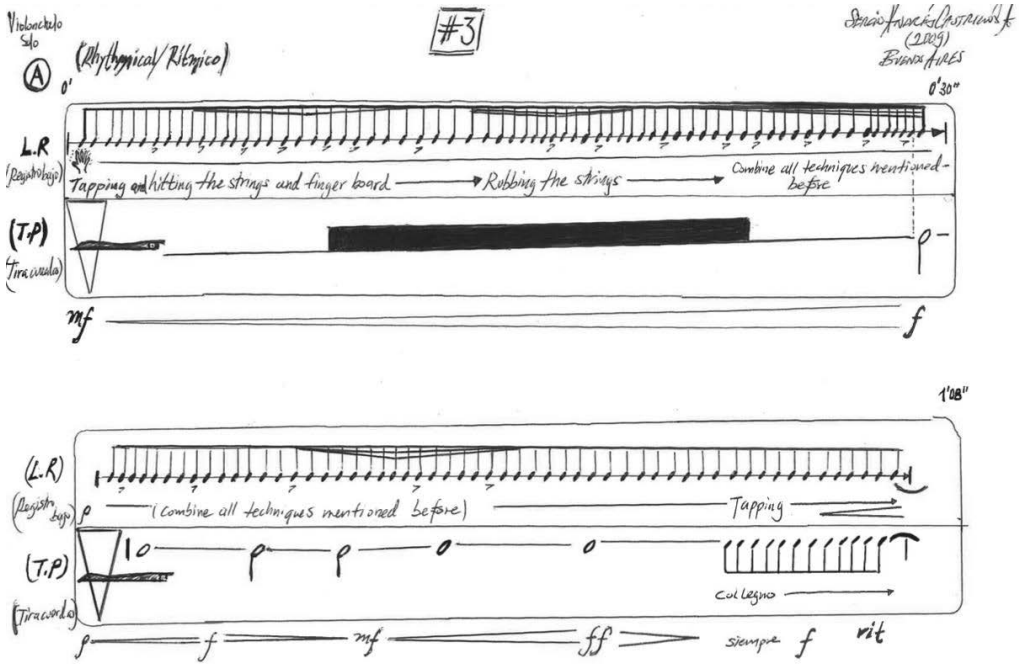
Ex. 4.64. *3 piezas A-formales (#2)* by Castrillón (2009: 5).

Piece *#3* adds percussive techniques, other noise elements, trills beyond the high register, and timbral modulations, among others, to the sound palette (see Ex. 4.65).



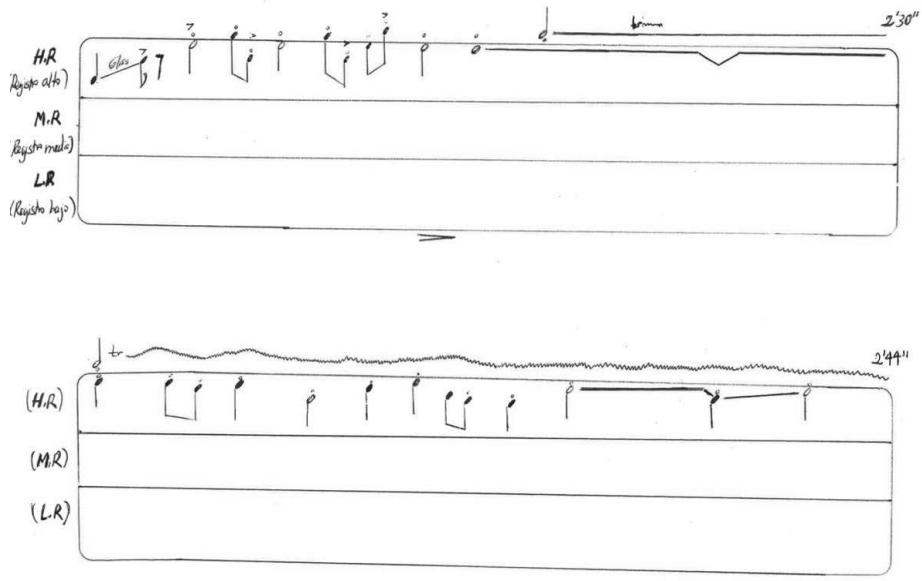
Ex. 4.65. *3 piezas A-formales (#3)* by Castrillón (2009: Indications).

Part A clearly emphasises the two main timbral elements explored throughout the whole piece: percussion and noise. The first is developed in a long phrase where the beat is accelerated and decelerated by continuously applying tapping, hits on the fingerboard, and string rubbing. These three techniques are then combined while the noise element appears through a bowed gesture on the middle part of the tail piece. Gradually, the resulting airy low sound turns into a percussive sound executed *col legno.* At the end of the section, the tapping and *col legno* techniques are juxtaposed, maintaining a homorhythmic beat (see Ex. 4.66.).

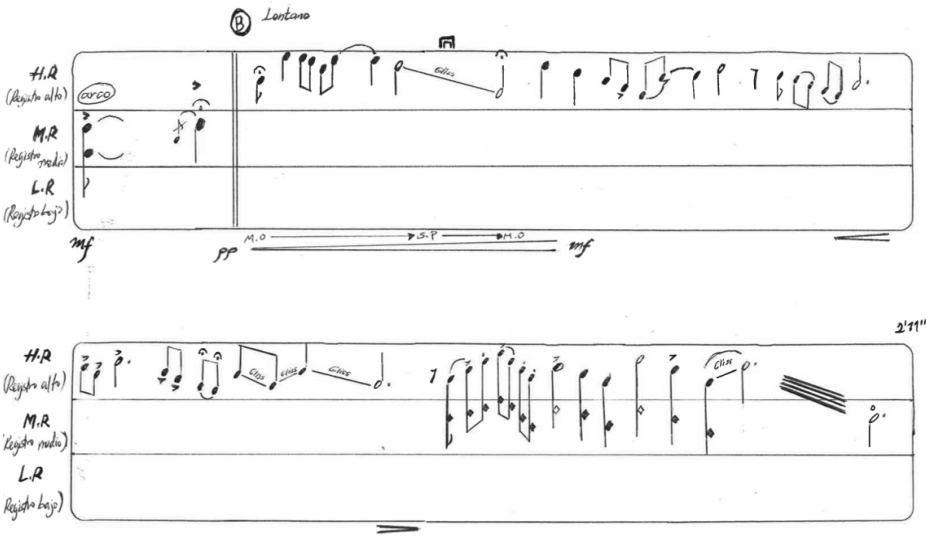


Ex. 4.66. *3 piezas A-formales (#3)* by Castrillón (2009: 1).

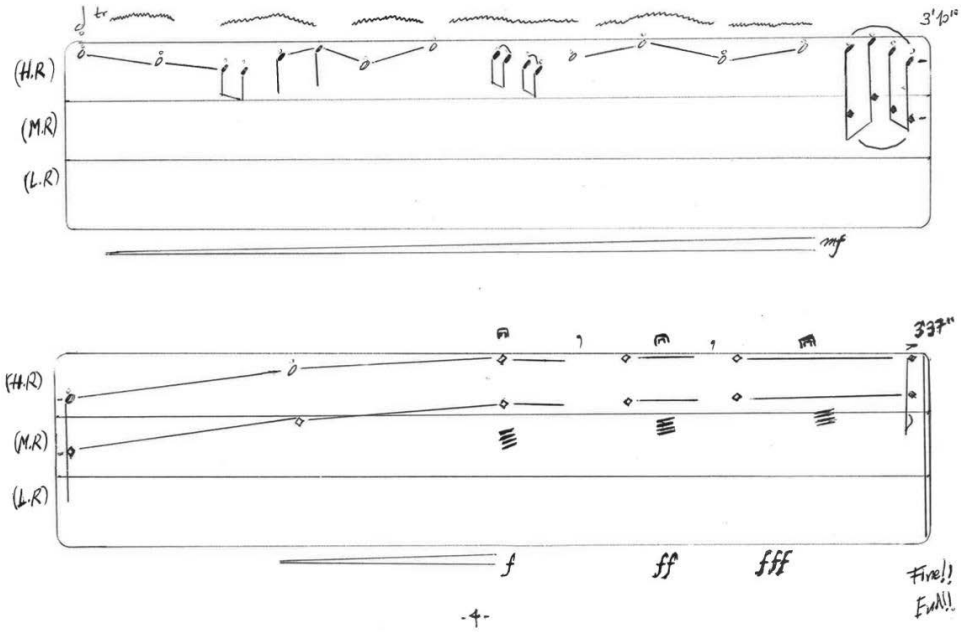
Finally, part B, which is connected to part A through a bridge where two bowed gestures appear, constitutes a sort of synthesis that includes most of the timbral elements exposed previously throughout the three pieces. However, this part also further develops techniques such as trills and *glissandi*, leading them to a coda where a long *tremolo* is articulated with overpressures and a *fff* that constitutes both the climax and the end of the piece (see Ex. 4.67, 4.68, and 4.69.).



Ex. 4.67. *3 piezas A-formales (#3)* by Castrillón (2009: 2).



Ex. 4.68. *3 piezas A-formales (#3)* by Castrillón (2009: 3).



Ex. 4.69. *3 piezas A-formales (#3)* by Castrillón (2009: 4).

3 piezas A-formales feature timbre and form as a sort of unity that interacts constantly with rhythm, tempo, expressivity, and pitch. There is nevertheless a hierarchy set by that unity within the piece. Namely, it constitutes the cornerstone in the musical discourse, in which the other elements mentioned are secondary.

4.2.8. *Desde las entrañas del Sudtrópico* by Sergio Andrés Castrillón Arcila

The compositional process of this piece started from an instrumental praxis through improvisational procedures that were recorded to keep preserve them. Then, step by step the structure of the piece was defined in four movements. Finally, the last procedure was to write the piece on paper, namely, as a sort of transcription from the final recorded version. Such an approach represented a sort of breakdown in the the composer's background, where composing from a pure intellectual impulse and searching for a strict structure even before the writing process were mandatory principals. Furthermore, these procedures (used even from the second half of the 20th century onward by several composers worldwide) somehow helped to start re-establishing improvisation as a key element within composition and brought up the idea of composing from an instrumental-practice perspective, rather than from an pure intellectual one.

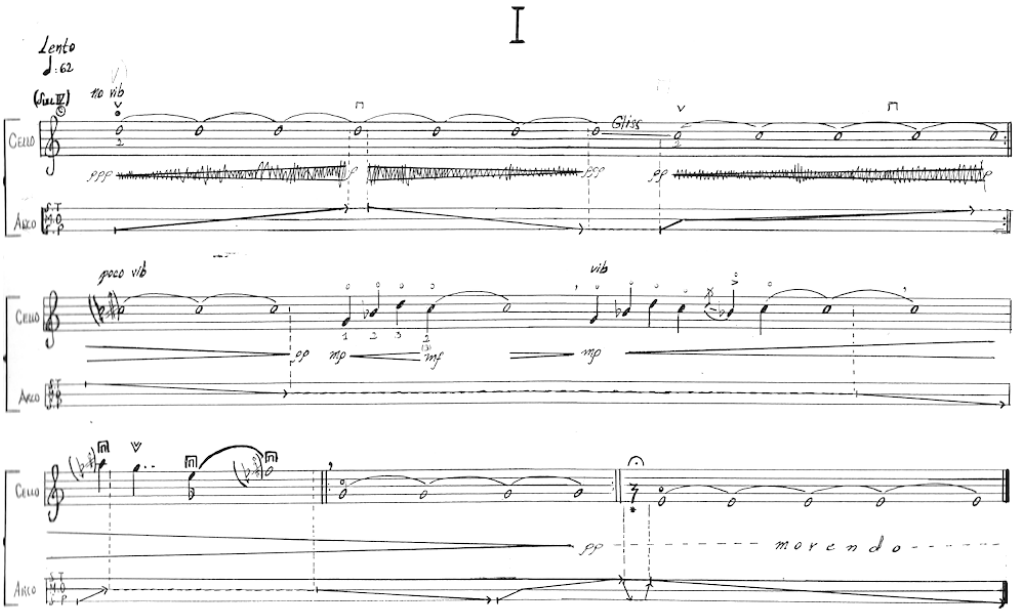
Behind this new experience that lasted almost three years, *Desde las entrañas del Sudtrópico* features a detailed and complex treatment of sound and a significant development of cello playing techniques. On the other hand, form, rhythm, and tempo were approached in a simpler way, which suggests again that timbre continued to be the main interest within this composers' phase. However, the timbral and technical complexity in the piece came from the composer's impulse to deconstruct and re-signify the sound of the cello through the idea of connecting his work with a South American identity. Therefore, this piece intends to represent in a solo cello the sonic properties of some instruments and some rhythms used in South American popular music and the sounds that are present in South American landscapes (see musical analysis below). This latter idea indicates that there was also a phenomenon of re-instrumentation within this piece. Moreover, from the title itself the work already contains a metaphorical intention: *Desde las entrañas del Sudtrópico (From the womb of South Tropic)* refers to something that comes from a deep part of the tropics, something that gives birth in the tropics. The extra-musical idea then turns into a very complex timbral development where all the techniques are used to avoid any conception of the cello as a European-developed instrument and rather to assign a sort of South American personality to it.

Although each movement in the piece has concrete sonic and technical ideas, within the general indications there are a few convergent points: 1) When the bow is used, it should have the minimum amount of resin on it to achieve a *windy* sound easily, and to facilitate the movement of the left hand fingers when close to the bridge; 2) Except for the second movement, the remainder of the piece is written in a double staff. The upper staff indicates the commands for the left hand. The other staff is a three-line scheme that displays the position of the bow within three different regions (S.T: *sul tasto,* M.O: *modo ordinario,* and S.P: *sul ponticello*); and 3) The *vibrato* should be executed only when indicated.

The first movement suggests a tempo *Lento* and opens with a sort of introduction that includes a long static gesture starting from D6 in a harmonic sound on the fourth string of the cello. After the gesture is established, a descending *glissando* appears ending on C6, in which a microtonal oscillation emerges gradually as consequence of a *poco vibrato* articulation. The whole gesture presents a timbral modulation suggested by bow shifting among the three regions mentioned above. The resultant sound, after adding to these technical and timbral features a dynamic treatment that ranges from *pp* to *p*, is one with a big load of air in which the pitch almost disappears. Hence, the intention in this gesture is to represent the sound of a *quena,* filtered by the movement of the bow among the different regions. After the introduction, a melody that is a citation to the chorus of the song *Água de beber*[41] (Drinking water) by Brazilian composer Antonio Carlos Jobim appears with a louder dynamic treatment on the M.O bow position and with a kind of strong expression produced by *vibrato*. This procedure permits the pitch and bow articulation to be easier

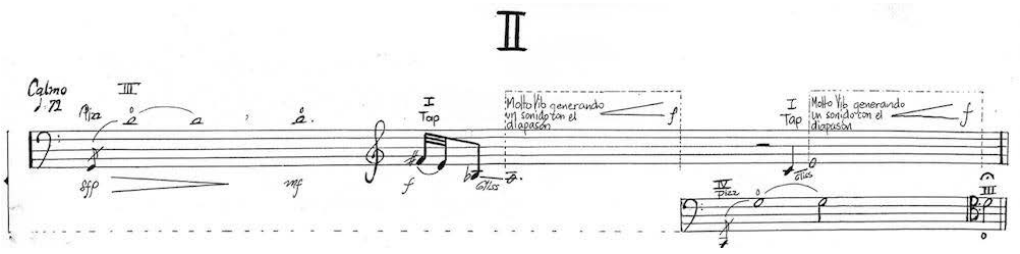
[41] Inspired after listening a version of the song by a group of Brazilian musicians in the main square of San Agustin (Huila-Colombia) in 2007.

to perceive. Before a re-exposition of the introduction, which turns into a coda, there is bridge where high-pitched broken sounds emerge through bow overpressure, resembling shamanic chanting. In conclusion, the sonic atmosphere generated by the emulation of a *quena* sound, the citation of a song, and the broken sounds interacting together intended to create a sort of syncretic soundscape where various South American cultural elements meet (see Ex. 4.70.) .



Ex. 4.70. *Desde las entrañas del Sudtrópico* by Castrillón (2010: 4).

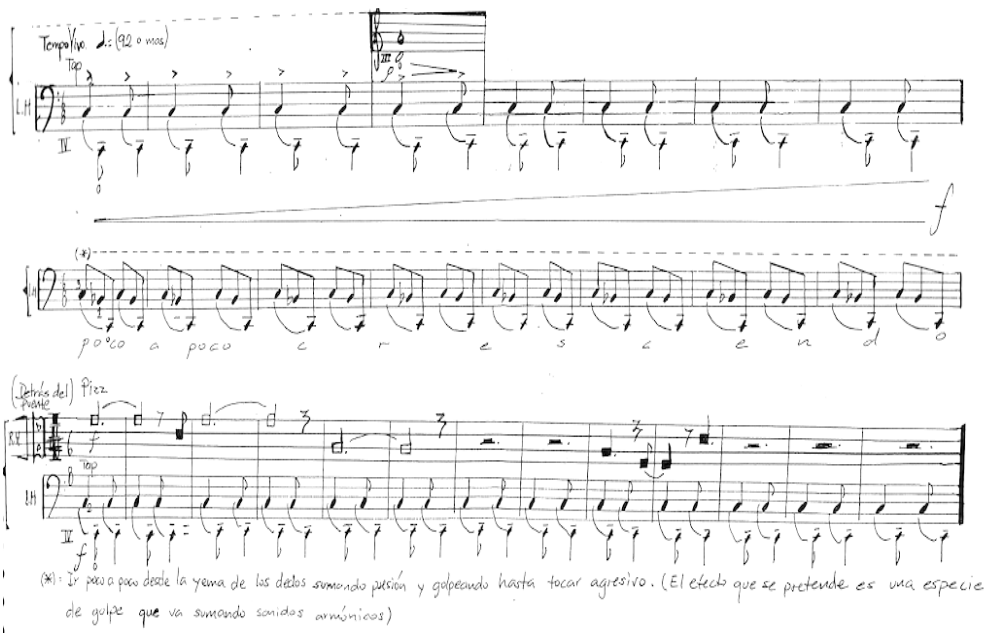
The second movement presents a systematic use of the *pizzicato* technique in both the left and right hand. This piece also has an introduction where right-handed *pizzicati* on harmonic sounds are in dialogue with left-hand tapping and *glissandi* within a tempo *Calmo* (see Ex. 4.71).



Ex. 4.71. *Desde las entrañas del Sudtrópico* by Castrillón (2010: 6).

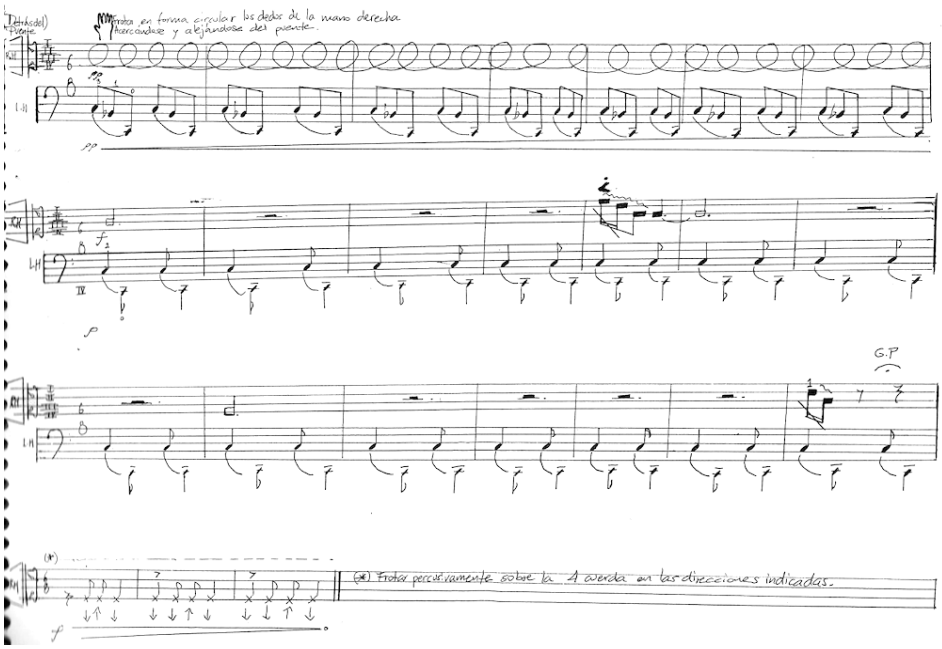
After this percussive passage (which aims to represent drummed sounds), two different rhythmic *ostinati* in 6/8 and a counterpoint appear in tempo *Vivo.* The *ostinati* are played with left-hand tapping, which evoke patterns used within some of the music styles of the Colombian Pacific region. In contrast, the counterpoint is suggested in right-hand *pizzicato* behind the bridge and resembles the sound of the *marimba de chonta*[42]. Besides the clear idea of re-instrumentation, another striking feature in this section is a gradual timbral modulation produced by superficially pressing the notes in the *ostinato* at the beginning and gradually adding more pressure until an aggressive percussive sound is achieved. This gesture is a kind of filter that reveals the high partials of the notes gradually. Moreover, when the tapping sound increases its volume other pitches appear randomly due to the finger hits against the fingerboard, generating a triple sound effect, hence, a timbral polyphony (see Ex. 4.72.).

[42] Traditional percussion instrument used in the music of the pacific region of Colombia. The *marimba de chonta* is made from bars of chonta and bamboo wood and includes vegetable fibers and metal. (Translated by the author from Spanish) (http://www.colombiaaprende.edu.co/html/etnias/1604/article-83206.html)



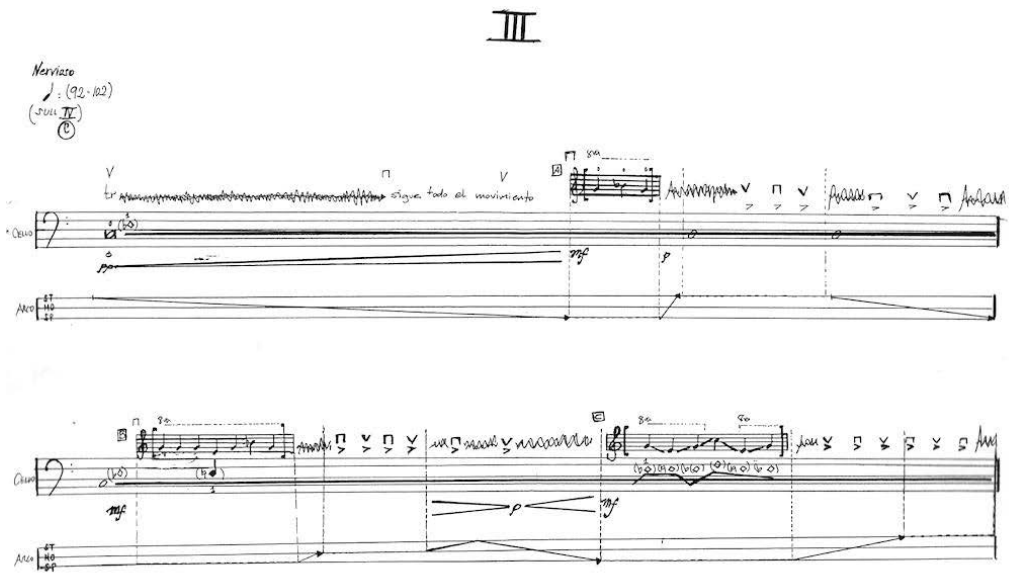
Ex. 4.72. *Desde las entrañas del Sudtrópico* by Castrillón (2010: 6)

During the last section of the second movement, the *ostinati* in 6/8 continues until the end. However, the last four bars show a sudden timbral modulation from the tapping sound on the fingerboard to a rubbed sound behind the bridge. The intention of this timbral modulation is not only to generate a variation in the sound bu t also to introduce a coda that disappears quickly through a fade out. By contrast, there is another timbral element juxtaposed to the *ostinati* throughout this section: A sort of windy sound that results through a circular-hand-rubbing technique on the strings behind the bridge. After this passage, a counterpoint in *pizzicato* behind the bridge reappears twice before the coda (see Ex. 4.73.).



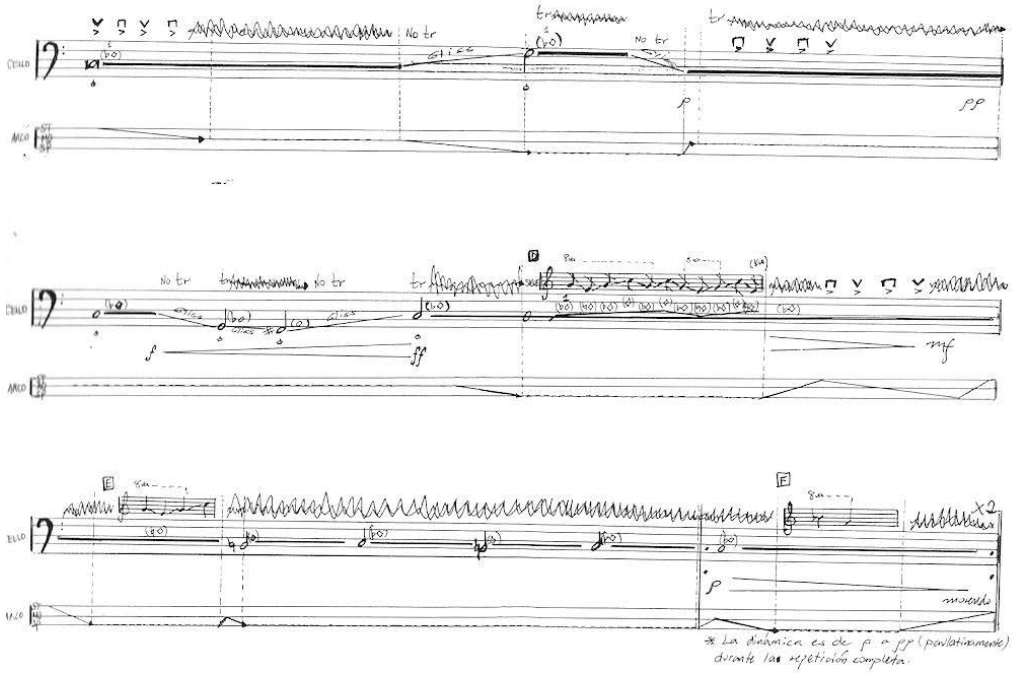
Ex. 4.73. *Desde las entrañas del Sudtrópico* by Castrillón (2010: 7).

As suggested in the first movement of the piece, the whole third movement must be played on the fourth string in order to facilitate the execution of the main gesture, which is a continuum-irregular trill articulated as fast as possible from the beginning to the end of the movement. This gesture somehow represents the *Nervioso* (nervous) character indicated in the score. However, there are fast changes in bow directions (up and down) that intend to add the windy element u sed in the previous movements. Then, through a timbral modulation produced by both sudden and gradual bow shifting and by varying the interval of the trill gesture, short melodies in artificial harmonics appear and disappear. The melodies can be created by the performer by choosing two or more notes from the superimposed staves. However, the process indicated in the score brings random melodies by itself. All these timbral elements and technical procedures generate a polytimbral development and a timbral polyphony in juxtaposition (see Ex. 4.74.).



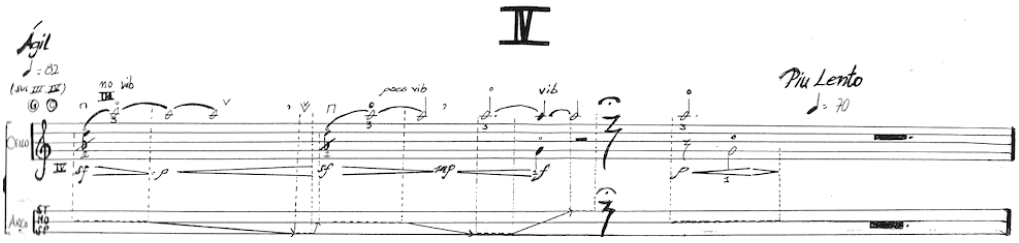
Ex. 4.74. *Desde las entrañas del Sudtrópico* by Castrillón (2010: 9).

The timbral complexity displayed in the first part of this movement is emphasised by adding ascending and descending *glissandi* throughout the second part. Moreover, the dynamic treatment changes from rather quiet to loud, which gives the second part more instrumental weight. Towards the end, almost all timbral elements, the playing techniques, and even the dynamic ranges used throughout the movement interact with each other, generating a climax not only in terms of timbre but also in expression and technique. Finally, a short coda consisting of a melody that reappears, emerges, and fades out leaves the trill gesture to remain alone until the end (see Ex. 4.75.).



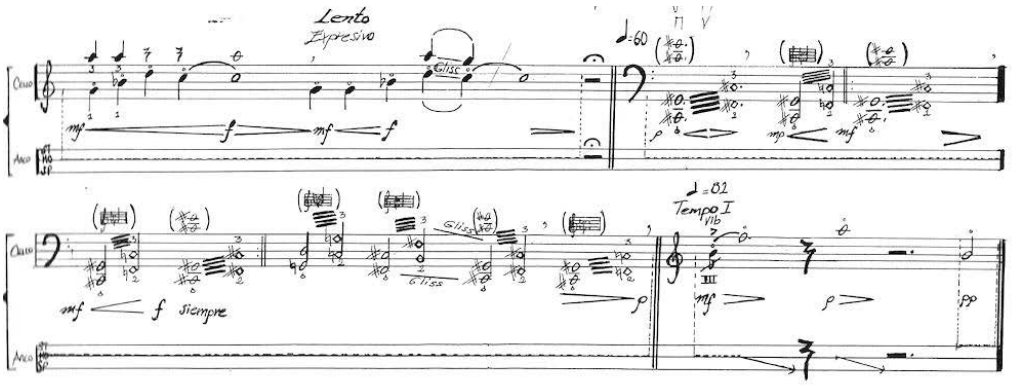
Ex. 4.75. *Desde las entrañas del Sudtrópico* by Castrillón (2010: 10).

The last movement is written to be executed on the third and fourth strings using only natural and artificial harmonics. The piece is formed by four parts; the first part is an intro in an *Ágil* (agile) tempo that brings up a long gesture in A6 that starts with a strong attack then decays quickly towards *p* and finally grows gradually in both volume and bow pressure. The noise element generated by the previous process leads to a repetition of the phrase, in which at the end a G4 underlays the A6. This new element works as a link to the formal and polyphonic development of the second and third sections. Moreover, during this gesture there is a significant timbral modulation produced by a constant bow shifting, which blends with the natural harmonics and stimulates the load of air in each sound (see Ex. 4.76.).



Ex. 4.76. *Desde las entrañas del Sudtrópico* by Castrillón (2010: 11).

The second part re-exposes the cited melody of the first movement *(Água de beber)* but superimposes another melody as a counterpoint. Namely, this new melodic line paraphrases and transforms the cited melody into a choral. Unlike the previous part, here the bow position remains on the M.O but a *glissando* towards the end somehow quotes the constant timbral changes of the first part. Nevertheless, this last gesture also reveals the formal and timbral development of the next section, where a complex timbral polyphony is the most striking feature. This consists of several blocks of sound layers oscillating constantly and generating a "hidden" melody and an accompaniment that towards the end break together into a sudden long ascending and descending *glissandi* gesture. After fading out, the last sound block connects fluidly to a short coda, which is a recapitulation of the first part (see Ex. 4.77.).



Ex. 4.77. *Desde las entrañas del Sudtrópico* by Castrillón (2010: 6).

In terms of playing techniques, the most remarkable feature in *Desde las entrañas del sudtrópico* is that all written indications and execution procedures precisely define the sonority of the piece. Namely, fingerings, bow positions, string locations, and bow directions should be followed rigorously to achieve a South-American timbral atmosphere.

4.2.9. *Meditaciones y Contemplaciones* by Sergio Gutiérrez Zuluaga

This piece was composed in 2012 in Buenos Aires during the last period of the composer's stay in Argentina. The premiere was in April 2014 in Helsinki within the series of concerts organised by Aurinko ry[43]. *Meditaciones y contemplaciones* underlines two elements: timbral and performance. According to the composer:

> The development of the piece begins with the expressive possibilities of the extended techniques suggested. On the other hand, it intends to explore timbre and the gradual transformations that occur when blending different techniques and different timbres within the cello, emphasising subtle timbral variations and the wide differences that are present between one timbre and another. Furthermore, there is an implicit approach to the theatrical role of the player and to the audience's perception of the performance from a bodily perspective, since the piece obligates the performer to achieve different physical positions, as well as the use of hands and bow throughout the whole instrument. Namely, the piece also intends to catch the spectator's other senses. In this case, the piece also receives a performance input that can reach the audience visually and not only from a pure musical idea. (Interview VI: 2 and 3.)

The piece has a length of about 12 minutes and is structured in five parts: *I, II, Interludio, III*, and *Postludio.* The *Meditaciones* (Meditations) are *I* and *III* and the *Contemplaciones* (Contemplations) are *II, Interludio*, and *Postludio.* This structure is strongly connected to both formal and expressive elements. Gutiérrez claims that:

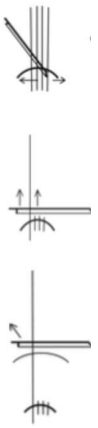
> This piece is divided in two groups: The *Meditaciones* and the *Contemplaciones.* The first ones are based on interactions among their diverse expressive elements, as it is at a personal level when there is a dissertation on diverse individual aspects that interact with each other. In that manner the *Meditaciones* have a discursive characteristic. Hence, always searching for an organic ever-present change in the appearance of each expressive element and in their relation. In other words, the *Meditaciones* keep a rational aspect. The *Contemplaciones* on the other hand, as their name indicate, are related to contemplate facts happening, as one does when sitting by the window observing the rain falling or laying on the grass to see the movement of the clouds. These are pieces of a hypnotic nature, inviting you to get into a trance and let yourself be taken by the event itself. Unlike the *Meditaciones,* these pieces are based on just one element that gradually transforms and keeps a sensual/sensory characteristic. (Interview V: 1.)

In addition to the specific formal and expressive elements (see the musical examples below) that are developed in each movement, Gutiérrez suggests a general proportional treatment of time within the whole piece, except for movement *II,* which is framed within a 6/8 + 3/4 rhythmic signature. However, the remaining movements operate with different time frames (indicated in seconds) and with musical figures in which their values vary according to the time frame suggested.

[43] Finland-based society actively promoting Latin American contemporary music.

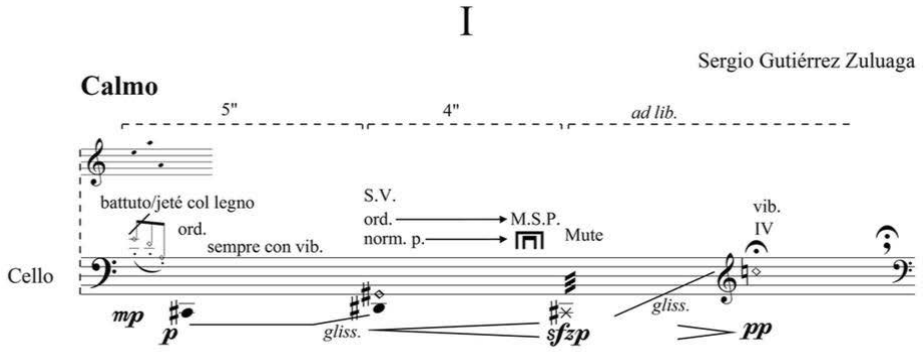
On the other hand, although *Meditaciones y contemplaciones* explores different timbral procedures and elements throughout the whole piece, there are some general indications related to the use of *vibrato*, bow transitions and pressure, and the execution of *glissandi.* For instance, the *vibrato* is not only left-handed but also an indication to let vibrate some gestures played with the bow (more like a resonance effect instead of an oscillation effect). Furthermore, the *vibrato* technique should be used only when indicated; for the remaining passages this technique should be avoided and therefore the composer uses the Italian convention S.V (*senza vibrato*). However, there is a *glissando-vibrato* gesture that must linger after the bow attack. Namely, this is a search for vibration of the resonance of the gesture without the bow. In terms of pressure, the composer indicates three different levels: norm. p: presión normal (normal pressure), mín p: mínima presión (minimum pressure), and máx. p: máxima presión (maximum pressure). A *scratch* technique is also used and is similar to the application of máx. p. but must contain mostly noise instead of pitch. In addition to bow pressure, the piece also suggests three different bow positions, which modulate constantly: M.S.P.: *moltissimo sul ponticello*, M.S.T.: *moltissimo sul tasto*, and M.S.CT.: *moltissimo sul capotasto* (from the nut of the cello).

Among the extended playing techniques in this piece, the composer specifies the execution of three of them through graphics due their sonic complexity and the limitation of the timbral result if notated otherwise. The first indicates that the performer should place and move the bow between the first and second string behind the bridge to achieve a sort of trill. The second suggests a perpendicular bow movement from the ordinary position upwards on the fourth string. Finally, the third indicates an oblique movement of the bow on the fourth string once the resonance box has been passed (see Ex. 4.78.).



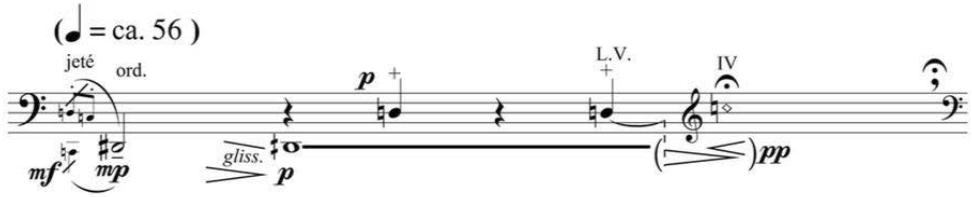
Ex. 4.78. *Meditaciones y Contemplaciones* by Gutiérrez (2012: *Abreviaturas y símbolos*)

After these general indications, each movement contains a specific form and time development and a defined sound treatment. Movement *I* is structured in fairly long phrases that suggest both a proportional and a measured time frame. The first phrase shows a proportional time frame in five seconds, four seconds, and time *ad lib* on a *Calmo* expression. Under these expressive and temporal parameters, the phrase opens with a percussive element on harmonics that lead to a sequence of long notes that include *glissandi* and *tremolo*. Furthermore, each note is articulated differently and with a specific timbral property (see Ex. 4.79.). Namely, this first passage, which is the main cell to be developed and re-exposed throughout the whole movement, shows constant timbral modulations. These include using bow transitions and contrasting techniques on the same gesture and a polytimbral development that leads to a timbral polyphony (see Ex. 4.79.).



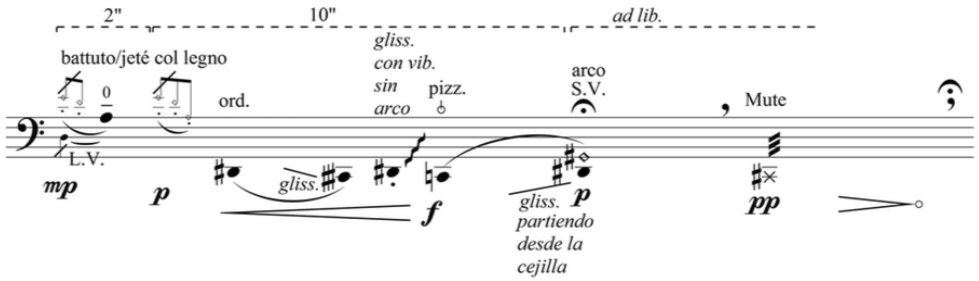
Ex. 4.79. *Meditaciones y Contemplaciones (I)* by Gutiérrez (2012: 1).

The second phrase of movement *I* proposes a time frame that maintains the proportional time characteristic. On the other hand, the percussive gesture reappears but in double strops and in *mf*, bringing more intensity. Another percussive gesture is superimposed to a microtonal pedal that emerges after a descending *glissando*. Finally, the last gesture of this phrase re-exposes the same harmonic sound used at the end of the previous phrase. (see Ex. 4.80.)



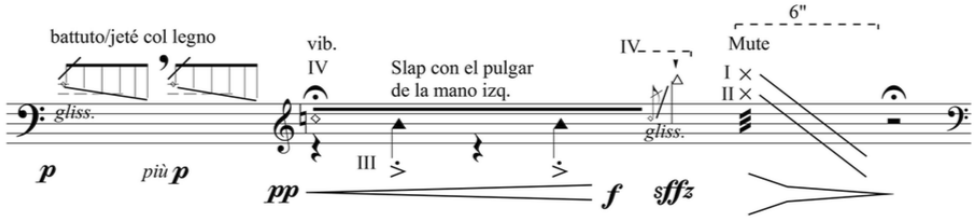
Ex. 4.80. *Meditaciones y Contemplaciones (I)* by Gutiérrez (2012: 1).

The third phrase further develops the percussive gesture in harmonics with an open string sound in the middle. Then the following gestures are developed within the lowest register, establishing a diatonic and microtonal conduction in a melody that includes contrasting techniques such as *glissando,* Bártok *pizzicato,* an artificial harmonic, and bowed *tremolo*. From this phrase forward the time frame continues to be indicated by marking seconds and time *ad lib* (see Ex. 4.81.) .



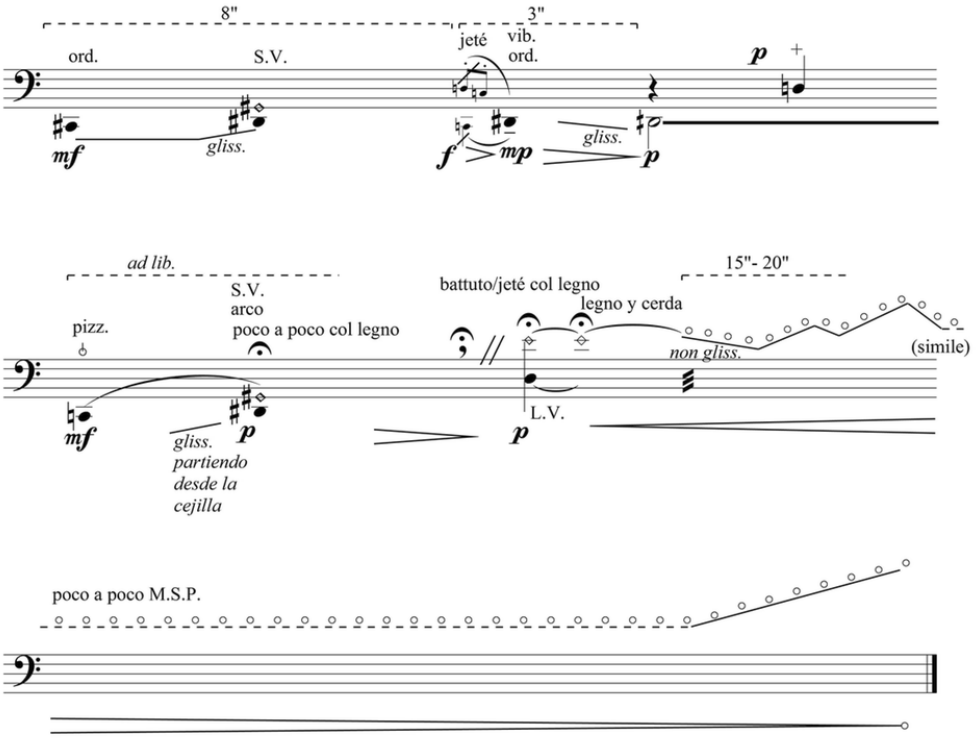
Ex. 4.81. *Meditaciones y Contemplaciones (I)* by Gutiérrez (2012: 1).

Within the fourth phrase different techniques are juxtaposed, generating a more complex polytimbral development. For example, the percussive effect is blended with a descending *glissando*, a slap with the thumb interacts with a high harmonic, an ascending *glissando* goes to the highest possible note, and from that point a muted double stop descends in *glissando* towards the lowest register of the first and second string. Furthermore, constant changes in the dynamic range and articulation emphasise the timbral complexity of the phrase (see Ex. 4.82.).



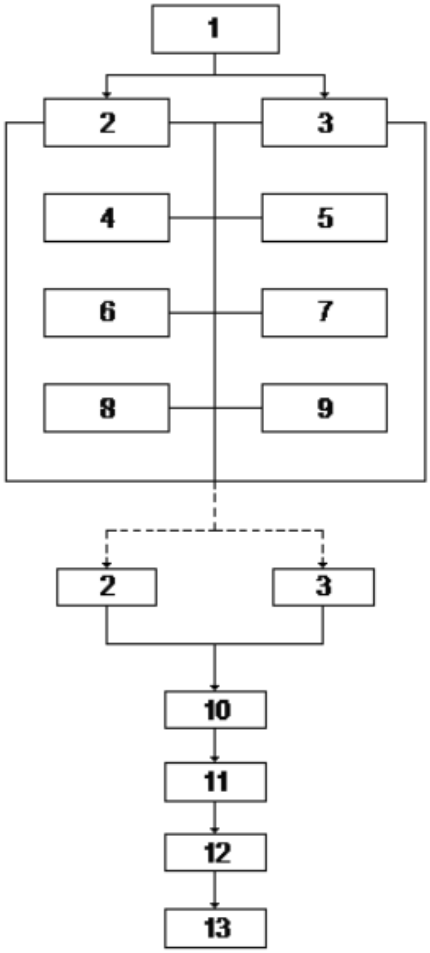
Ex. 4.82. *Meditaciones y Contemplaciones* by *(I)* Gutiérrez (2012: 1).

The last two phrases of this movement include many of the elements used previously within a conclusive formal development. Namely, a sort of long coda that in its first part re-exposes the percussive gestures, *glissandi,* Bártok *pizzicato*, the melodic microtonal and diatonic conduction and the artificial harmonics leads to a final passage where a bowed *tremolo* gesture oscillates within the highest pitch range of the instrument and finishes reaching the highest note possible in diminuendo. (see Ex. 4.83.) .



Ex. 4.83. *Meditaciones y Contemplaciones (I)* by Gutiérrez (2012: 2).

Movement *II* is based on rhythmic and sonic elements the African Aka Pygmy music. According to Gutierrez: "I took this piece as a reference thinking of its ritual, improvisational, and hypnotic features." (VIa: 1.) Therefore, this movement constitutes a citation of a rhythmic pattern of this music, which displays an *ostinato* that continues from the beginning to the end. The ritual and hypnotic element lies on the repetition, while the improvisational element is shown by giving the performer the possibility of repeating the pattern in certain moments and even jumping from one part to another. For instance, this movement is structured in three main parts that contain 13 bars/modules indicated with numbers and suggests to the performer to begin with bar number 1 in its first part. Then after continuing to bars number 2 and 3, the performer can repeat and jump from any module between 2 and 9. The second part suggests that the cellist decides freely when to go back to bar number 2 and 3, which is a bridge to jump to bar number 10. From that point the last part begins and the performer should follow the bars in order until the end (see Ex. 4.84.).



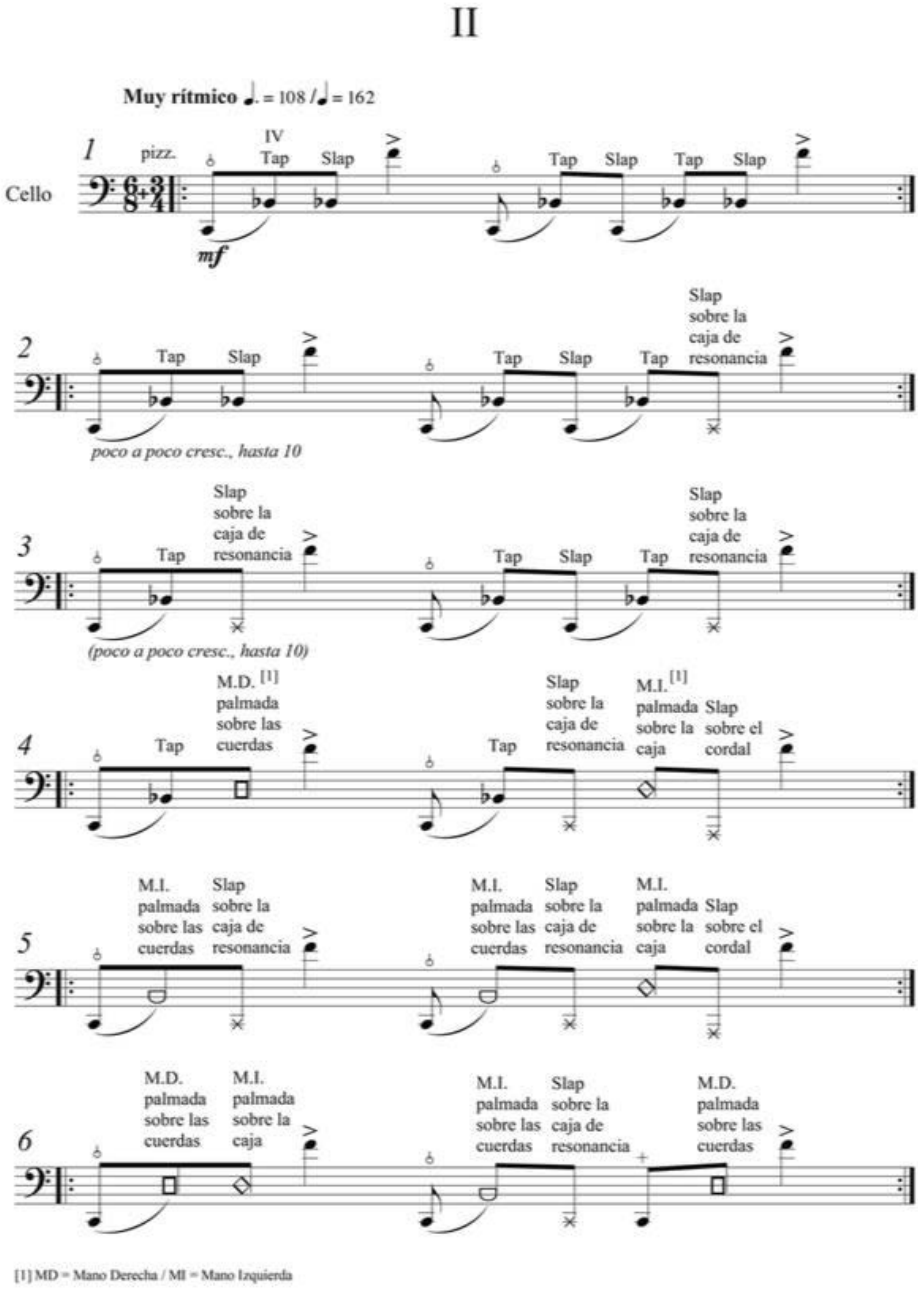
Ex. 4.84. *Meditaciones y Contemplaciones (II)* by Gutiérrez (2012: Structure scheme).

Another improvisational idea presented in movement *II* comes from the composer's request of repeating each module as many times as desired before moving to the next one, avoiding symmetric and obvious patterns. According to Gutiérrez[44]:

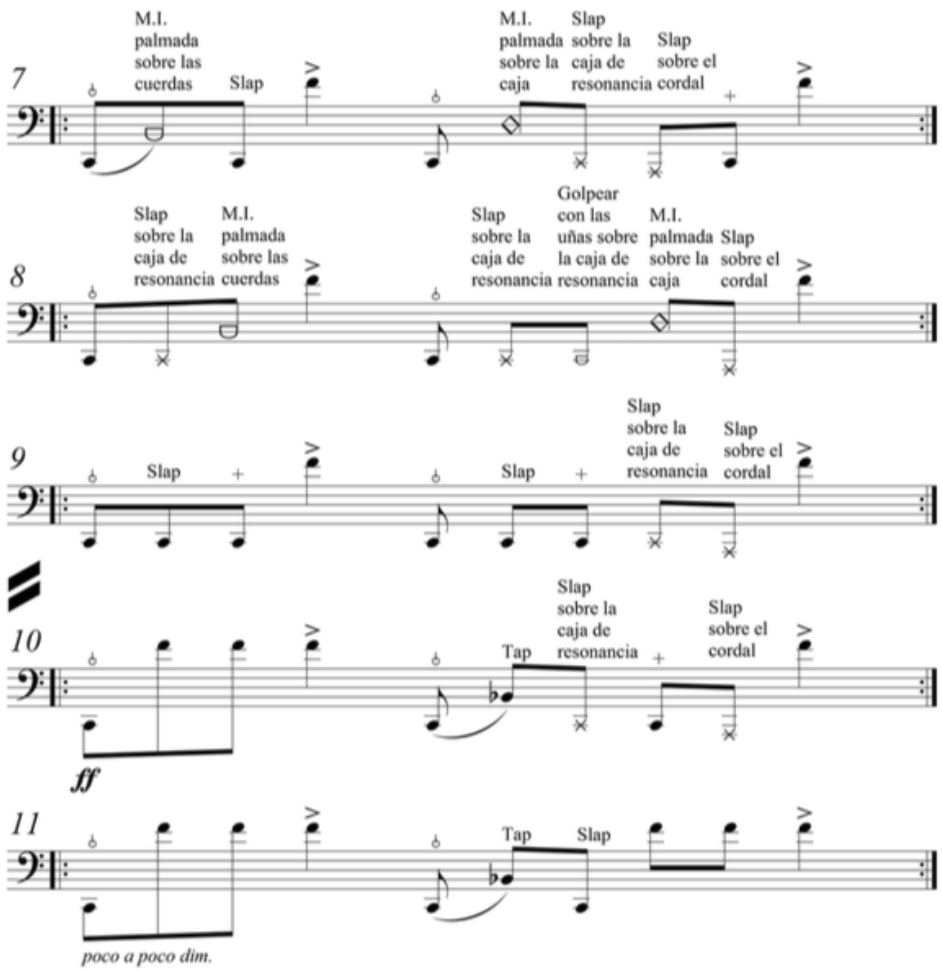
[44] Conversation with Sergio Gutiérrez about his piece and suggestions for its interpretation. (Buenos Aires, March 9th 2012)

> In general it is required to play with the audience's expectations, to create surprises and to frustrate expected situations but taking in account always that all the movement is like a dance, a ritual-hypnotic dance. Therefore, it is important to take the audience into that trance and to avoid creating any distraction that take them out of that state.

The techniques used in movement *II* are merely percussive, which is strongly connected to idea of re-instrumentation. Namely, the composer deconstructs both the traditional technique and timbre of the cello and turns it into a different instrument with a different functionality. In this case the cello becomes a percussion instrument that has different timbres itself, some of them sharp and bright and others rather low and dark. Those timbres are achieved through several techniques (where the performer should use both right and left hand), including Bártok *pizzicato*, tapping, and strokes or slaps (or both) on the strings, body, fingerboard, and tailpiece. Moreover, the use of these techniques is precisely described in the score to specify the sounds to be achieved and to emphasise the constant timbral modulation that occurs from the beginning until bar number 11 (by changing bar by bar one technique and hence one timbre) (see Ex. 4.85 and 4.86.).

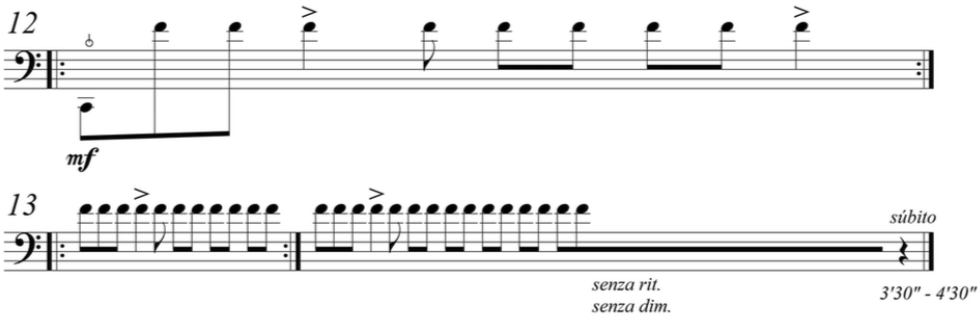


Ex. 4.85. *Meditaciones y Contemplaciones (II)* by Gutiérrez (2012: 2).



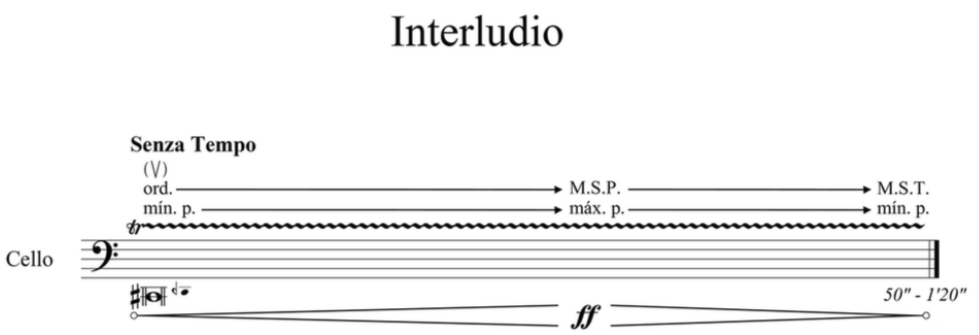
Ex. 4.86. *Meditaciones y Contemplaciones (II)* by Gutiérrez (2012:1).

On the other hand, in bars number 12 and 13, the composer resorts to traditional *pizzicato* technique to create a contrast in both the timbral and dynamic development. Namely, this creates a constant change of sounds and a gradual *crescendo* to a single timbre and a static-flat volume range (see Ex. 4.87.).



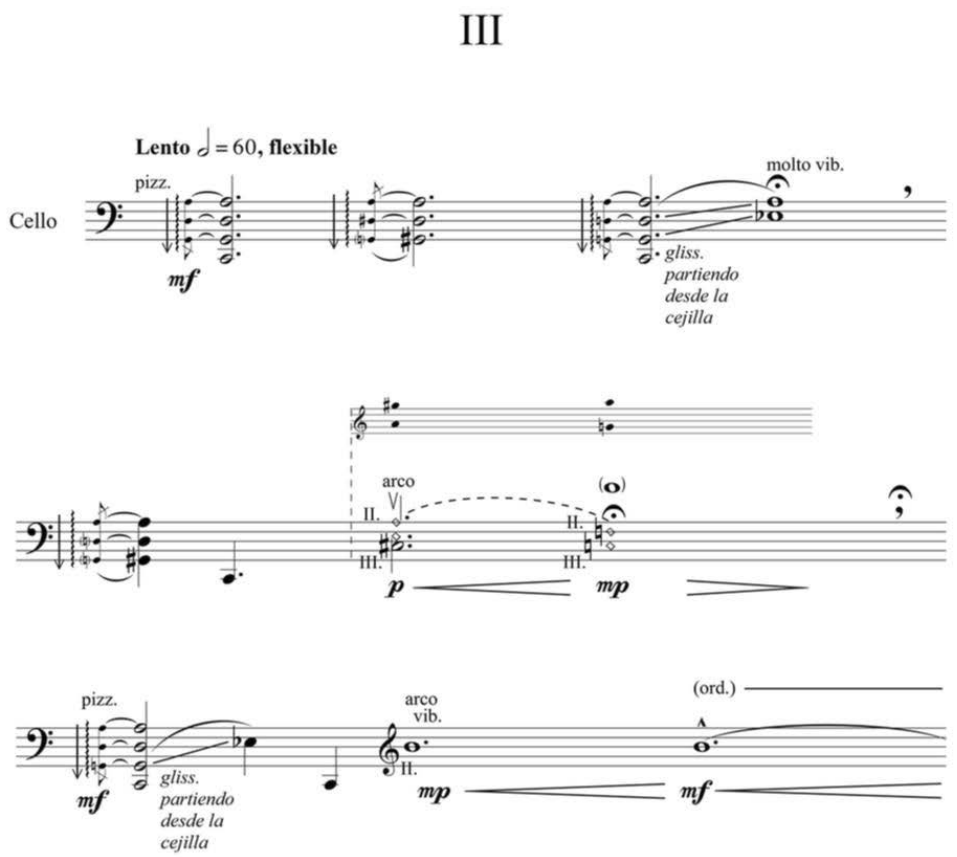
Ex. 4.87. *Meditaciones y Contemplaciones (II)* by Gutiérrez (2012: 2).

Interludio is a single trill gesture that increases and decreases in volume while developing a gradual timbral modulation through bow shifting (*Ordinario,* M.S.P.*,* and M.S.T.). Furthermore, there is also a change in the bow pressure (min. p, max. p, min. p), which juxtaposes to the gesture a sort of noise load that gradually eliminates the pitch perception. In other words, these two synchronised procedures input to the trill gesture a filter that gradually exposes the overtones of the two pitches, generating a timbral polyphony with a pure noise passage in the middle. (see Ex. 4.88.)

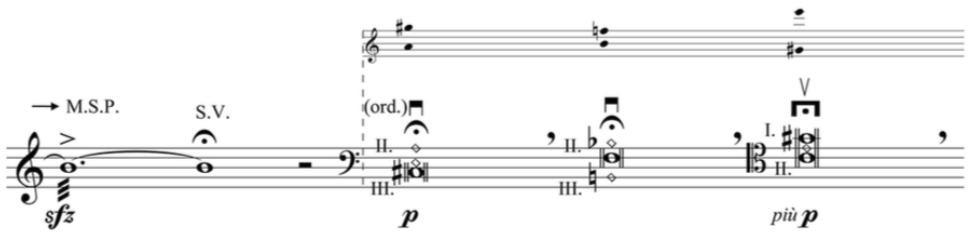


Ex. 4.88. *Meditaciones y Contemplaciones (Interludio)* by Gutiérrez (2012).

Movement *III* begins with a phrase based on four descending chords where *pizzicati, glissandi*, and *molto vibrato* interact. Although the composer suggests a tempo *Lento,* the tempo can be constrained and stretched flexibly to vary the resonance of each gesture. The second phrase shows a radical change in timbre and articulation by introducing two bowed gestures in artificial harmonics. However, after a pause a descending chord in *pizzicato* and a long ascending *glissando* appear again followed by a long bowed high pitch with *vibrato* that re-exposes with a slight variation the first two gestures (see Ex. 4.89. and 4.90.).

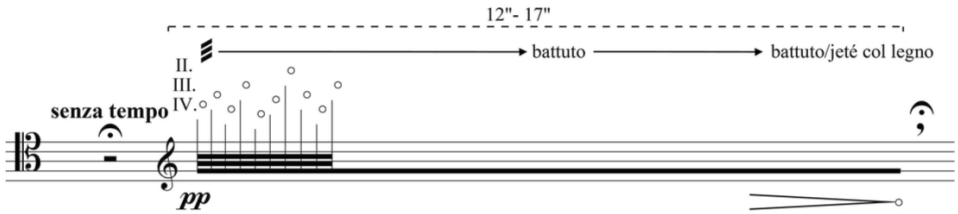


Ex. 4.89. *Meditaciones y Contemplaciones (III)* by Gutiérrez (2012: 1).



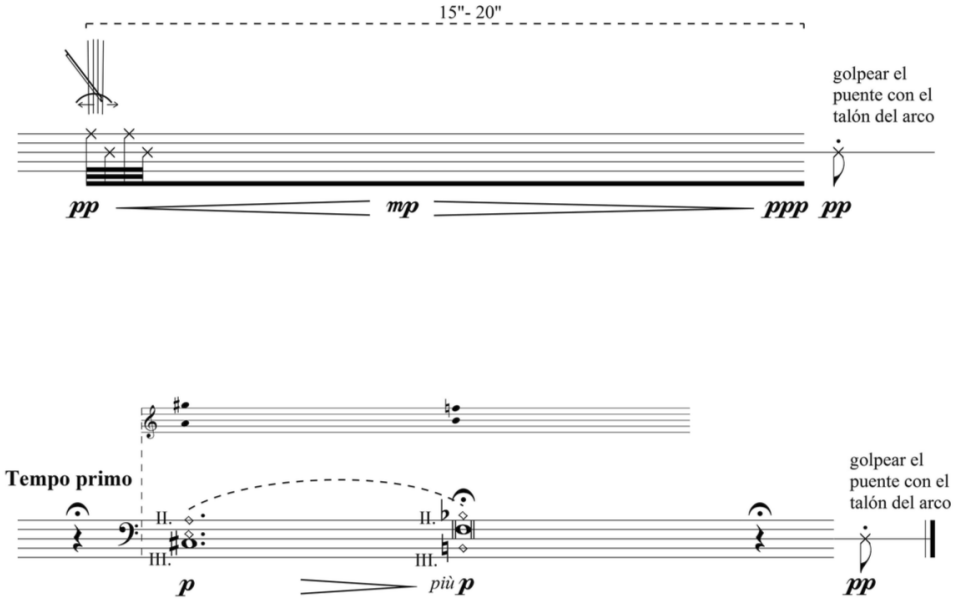
Ex. 4.90. *Meditaciones y Contemplaciones (III)* by Gutiérrez (2012: 2).

Towards the end of movement *III*, two significant gestures in terms of timbre and performance development are introduced. One is based on a *tremolo* passage in natural harmonics on the second, third, and fourth strings. The performer is free to choose the pitches and the string shifts. However, the score indicates that this passage occurs within the highest register of each string. The main feature of the gesture lies on the sudden timbral modulations that the change in bow technique generates. For instance, the *tremolo* lingers until the end but starts using the hair of the bow, which creates a clear-pitched light sound. The technique then changes to *battuto*, which adds a load of air to the sound and subtracts some partials of the pitches. Finally, the technique changes to *battuto/jeté col legno.* This technique creates a pure percussive sound that reveals higher pitches due to the position of the left hand on the strings and the strikes of the bow wood against them (see Ex. 4.91.).



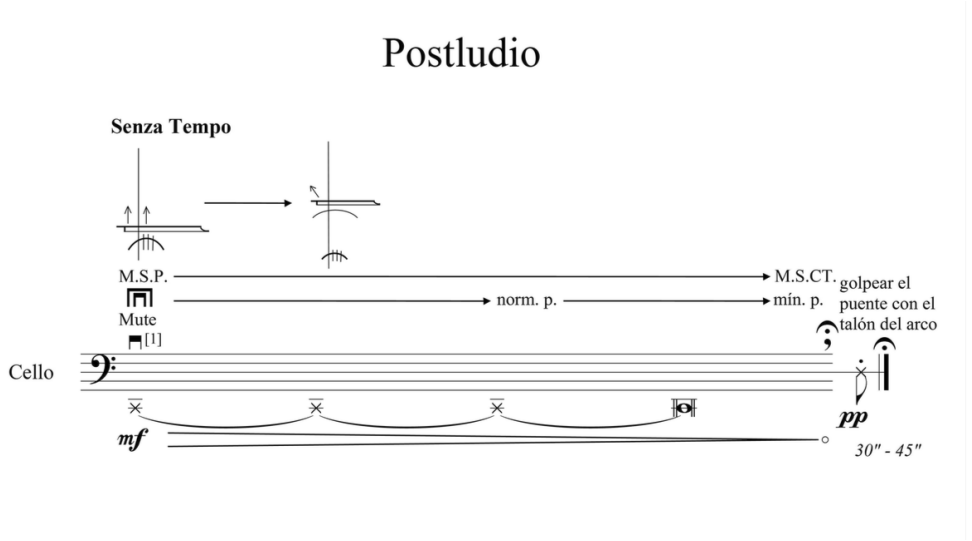
Ex. 4.91. *Meditaciones y Contemplaciones (III)* by Gutiérrez (2012: 2).

The other gesture requires a technique mentioned before, which requires that the performer break with conventional cello posture and find an individual means of introducing the tip of the bow between the first and second string behind the bridge and shake them very fast. This technique creates a trill that produces a granulated sound that starts very quiet, increases in the middle of the gesture, and decreases towards the end where the trill is interrupted by a percussive sound produced by striking the frog of the bow against the bridge. After these two gestures there is a re-exposition of the bowed artificial harmonic passage used at the beginning of the movement, followed by another strike against the bridge, which constitutes the end of the movement *III* (see Ex. 4.92.).



Ex. 4.92. *Meditaciones y Contemplaciones (III)* by Gutiérrez (2012: 2).

Postludio displays a long-muted sound on the fourth string that towards the end reveals the pitch of the open string (C). On top of this process there is variation on bow pressure (scratch, norm. p., min. p.,) throughout the whole gesture. Furthermore, the cellist should start playing by rubbing the bow perpendicularly on the fourth string from the bridge upwards (M.S.P). When passing over the body of the cello the bow should be changed to an oblique position aiming its tip to the head of the cello. In this position the performer continues rubbing the string until reaching the nut of the cello. The three juxtaposed processes generate in the beginning a granulated loud noise where different low and high pitches appear and clash randomly. The noise load then decreases and a clear pitch sound passage appears, randomly showing some of the partials of the C2. At the end, the granulation is even more clear and gradually decreases towards silence. After a pause the strike against the bridge reappears, emphasising its conclusive characteristic (see Ex. 4.93.).

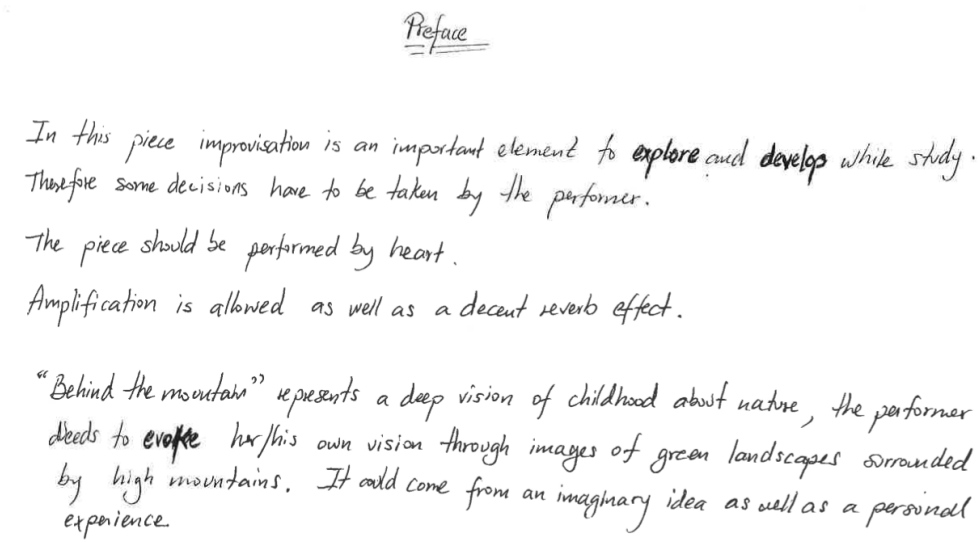


Ex. 4.93. *Meditaciones y Contemplaciones (Postludio)* by Gutiérrez (2012).

In conclusion, *Meditaciones y Contemplaciones* is a piece with many timbral changes and requires that the performer creates several techniques to achieve the sounds suggested. However, the improvisational and random elements of the piece emphasise more the importance of the performance processes rather than the sound result, as it is clear that the latter will vary depending on several factors such as the performer, the instrument that the piece is played on, and even the acoustic features of the space.

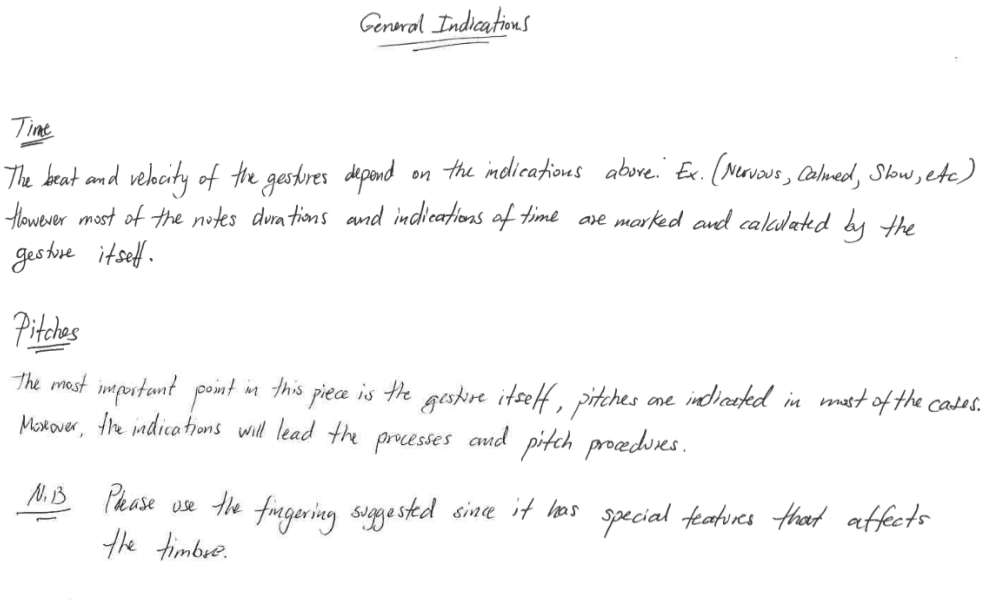
4.2.10. *Detrás de la montaña*/*Behind the mountain* by Sergio Andrés Castrillón Arcila

The composition of this piece began in August 2011 in Buenos Aires (Argentina) and ended in March 2012 in Helsinki (Finland). *Detrás de la montaña* is structured in three contrasting movements. The score is written by hand and combines traditional notation with graphics and was conceived as a musical-visual work. From the visual features, it is important to remark that the piece intended to keep a sort of "sketchy" writing style where mistakes, deletions, and crooked lines and graphics represent imperfection and difficulty, which is more related to a conceptual idea than to a purely musical one. In addition, the piece is strongly connected to an extramusical element based on an image of a mountainous landscape, which defines most of its timbral characteristics, techniques, and generates a poetic musical discourse linked to an impression on nature. On the other hand, the piece includes improvisational elements and requieres that the performer to play by heart, which stimulates both creativity and memory development. This gives a certain freedom within the interpretation. Furthermore, amplification and reverb are allowed to accomplish different sonic and spatial elements (see Ex. 4.94.).



Ex.4.94. *Detrás de la montaña* by Castrillón (2011–12: Preface).

The development of time is guided by the expression of the phrases and gestures themselves. For instance, expressive indications such as "Nervous", "Calmed", and "Slow" are suggested to be the tempo and time references. Namely, these elements are executed by a personal interpretation of the performer on the indications mentioned above. In terms of pitch, the piece includes exact pitch notation and aleatoric and free pitch procedures. The score also indicates that the gestural expression of the piece is more important than the pitch organisation, as there are many passages where there is no exact pitch notation and pitch must be determined by the performer following the gestural procedure indicated. However, when the exact pitches and fingerings are notated, it is suggested to follow them strictly to achieve the sonic atmosphere related to the mountainous landscapes and nature (see Ex. 4.95.).


General Indications

Time

The beat and velocity of the gestures depend on the indications above. Ex. (Nervous, calmed, Slow, etc) However most of the notes durations and indications of time are marked and calculated by the gestive itself.

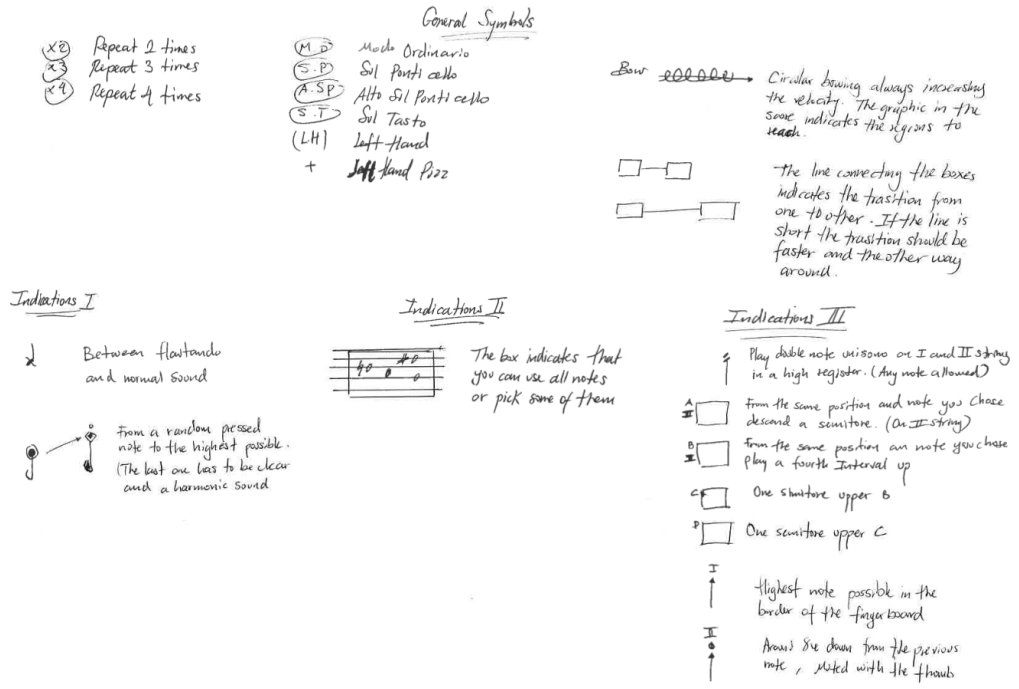
Pitches

The most important point in this piece is the gestive itself, pitches are indicated in most of the cases. Moreover, the indications will lead the processes and pitch procedures.

N.B Please use the fingering suggested since it has special features that affects the timbre.

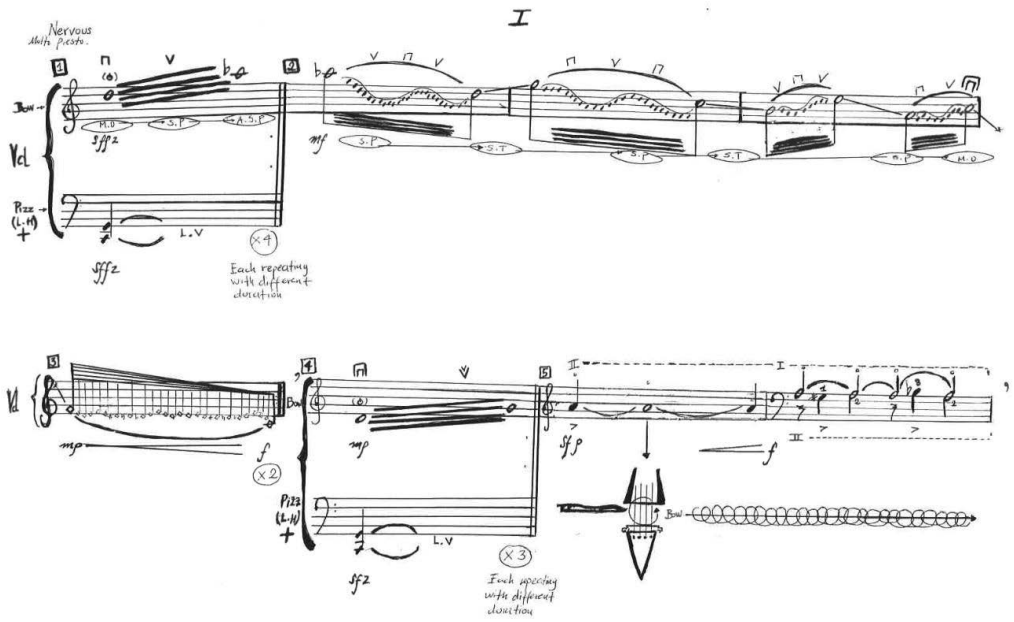
Ex. 4.95. *Detrás de la montaña* by Castrillón (2011–12: General Indications).

There are general symbols used to define certain playing techniques, timbral features, and performing procedures. These include circular bowing, bow shifting, and receptions among others. However, each movement also has its own particular indications (see Ex. 4.96.).



Ex. 4.96. *Detrás de la montaña* by Castrillón (2011–12: General symbols).

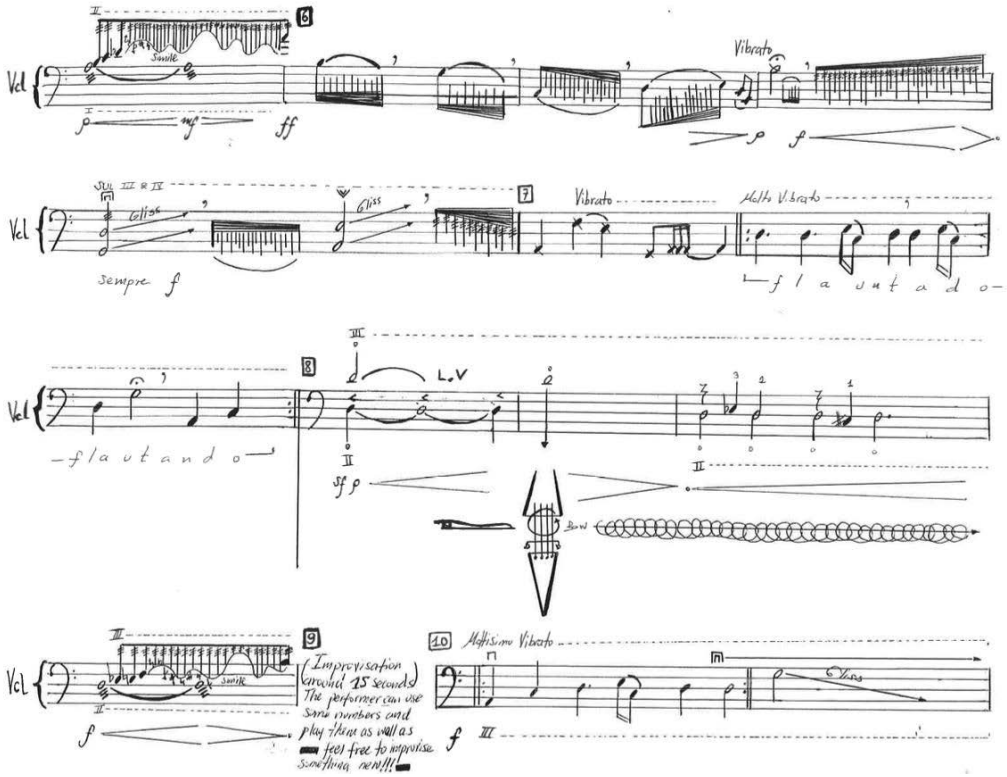
The first movement is organised in numbers that indicate a long phrase. Each is divided into bars that separate shorter phrases and gestures, although the musical discourse is continuous from the beginning until the end. However, this movement clearly shows a structure organised in three larger parts. The first part goes from number 1 to number 4 and presents a main trill cell in the high register juxtaposed to a *pizzicato* in the low register. In this part, the trill carries on and varies in pitch, articulation, and intensity and suggests constant gradual and sudden timbral modulations produced by bow position shifting. Furthermore, number 3 shows a timbral modulation accomplished by radically changing the trill technique to a melodic passage in harmonic sounds, which is followed by a re-exposition of the main trill cell but this time without the bow position shifting (see Ex. 4.97.).



Ex. 4.97. *Detrás de la montaña (I)* by Castrillón (2011–12: 1), number 1–4.

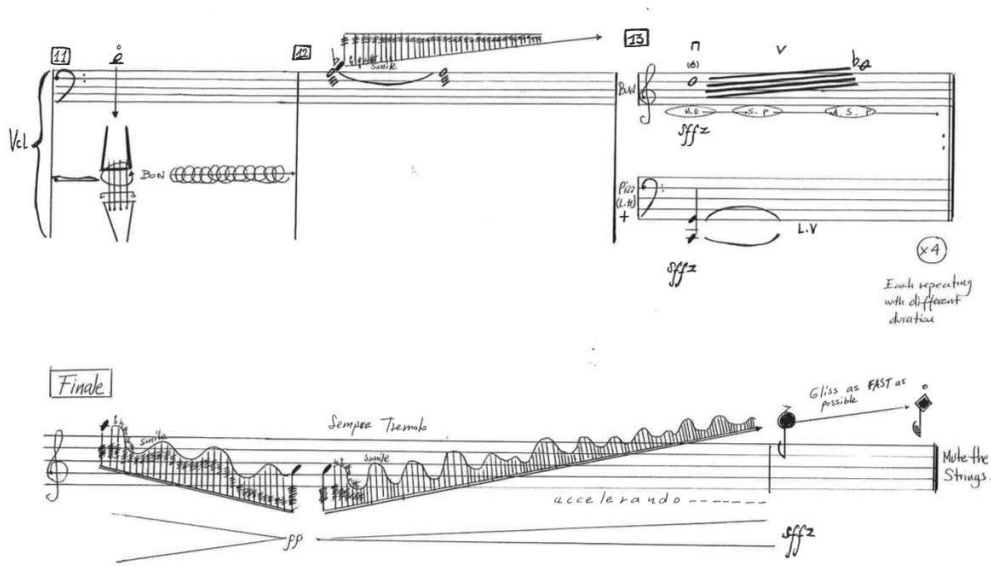
The timbral variation shown in number 4 acts as a bridge for the second part of this movement, which goes from number 5 to 10. Within these numbers there are essentially three materials used with different playing techniques, hence establishing a timbral contrast that coexists and independently maintains the *Nervous molto presto* feeling suggested. One material is developed in number 5, which shows a long pedal note executed with a fast circular bowing technique that randomly filters the some of its partials. Then under the same technique the pedal note changes to an octave lower and interacts with a descending second minor and an ascending one that leads to a fast *tremolo* that keeps the pedal note in one layer and expands the melodic conduction to different ascending and descending intervals in the other. Hence, this procedure creates a timbral polyphony achieved by bow technique and emphasised by the pitch treatment, which at the same time creates two melodic layers. In other words, this creates a sort of polyphony with a timbral polyphony. The other material is developed in number 6, where a series of undefined pitched fast gestures must reach the middle and low registers of the instrument using different techniques and articulations, including *glissandi,* overpressure, *vibrato*, and *tremolo*. Finally, the third main material is used in number 7, which is a melody in a pentatonic scale (A-C-D-E-G) that is repeated and articulated with *molto vibrato* and *flautando.* These latter analysed materials continue interacting with each other and vary in pitch and intensity in number 8 and 10. However, number 9 suggests that the use of these materials and others are developed within the piece in an

improvisatorial way. The performer is also encouraged to use new materials over a time frame of 15 seconds, which works as a bridge to continue to the last part of the movement (see Ex. 4.98.).



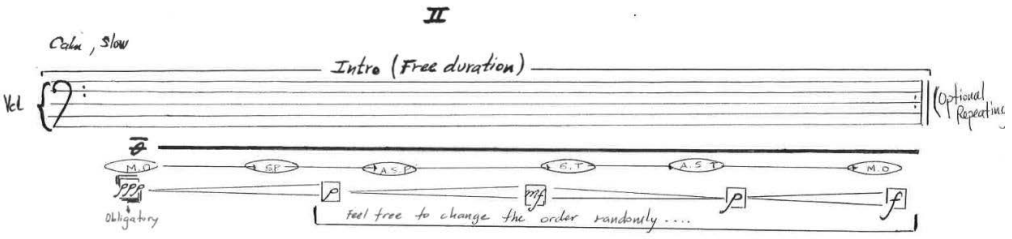
Ex. 4.98. *Detrás de la montaña (I)* by Castrillón (2011–12: 2), number 5–10.

The final part of movement *I* shows in number 11 and 12 a re-exposition of the main playing techniques and timbral procedures used previously, including circular bowing, *tremolo* in double strops, and *glissandi.* On the other hand, number 13 re-exposes exactly the main trill cell used at the beginning of the piece and is followed by a *Finale,* which is a coda that suggests a fast tremolo gesture within the highest register (see Ex. 4.99.).



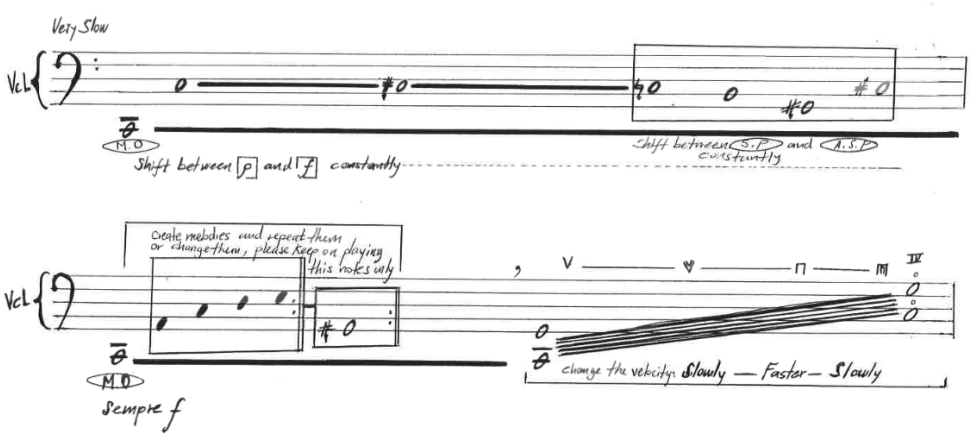
Ex. 4.99. *Detrás de la montaña (I)* by Castrillón (2011–12: 3), number 11–*Finale.*

The second movement presents a low pedal note (C2) that continues from the beginning until the end. However, most of the time, timbral and expression processes are superimposed to the pedal, which gradually generate different layers and polyphonic passages. For instance, the piece opens with an intro that indicates through an adjective and state (calm, slow) the tempo of this fragment, which suggests a free duration. Hence, duration and the tempo will be defined by the performer based on the feelings suggested. On the other hand, this intro includes a timbral modulation through gradual bow position shifting emphasised by certain dynamics, which by random operation can increasingly vary the sonic features of the passage (see Ex. 106.).



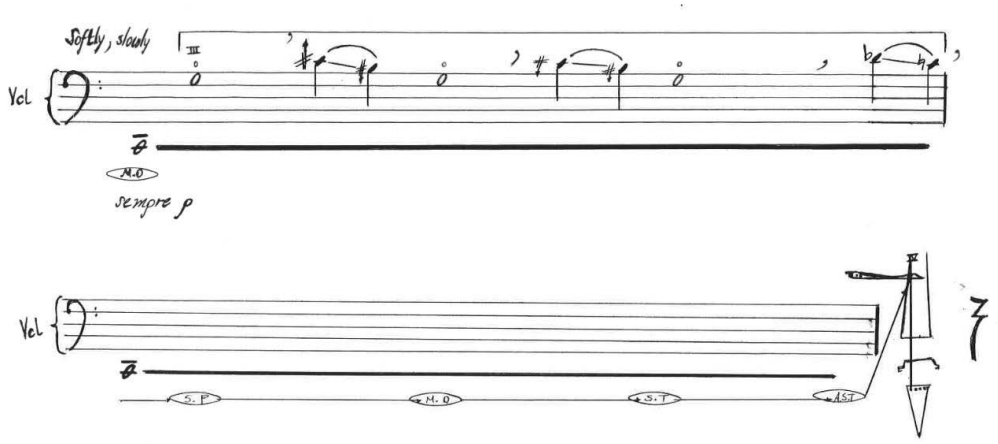
Ex. 4.100. *Detrás de la montaña (II)* by Castrillón (2011–12: 4).

After the intro, the tempo turns to a *very slow* feeling and superimposes to the pedal a microtonal gesture followed by a set of pitches, which can be used in any order. The main intention is to create different melodies juxtaposed to the pedal and to somehow interact with it. The timbral modulation idea and the intensity variations continue under random procedures. This continues to give the performer the possibility to make decisions and contribute to the creative process. The last part of movement *II* is preceded by a bridge, which is a re-exposition of the main trill cell of movement *I*. Namely, the narrative of the piece emphasises this element, which reconnects a former idea and simultaneously works as a link to introduce a new process in the following movement (see Ex. 4.101.).



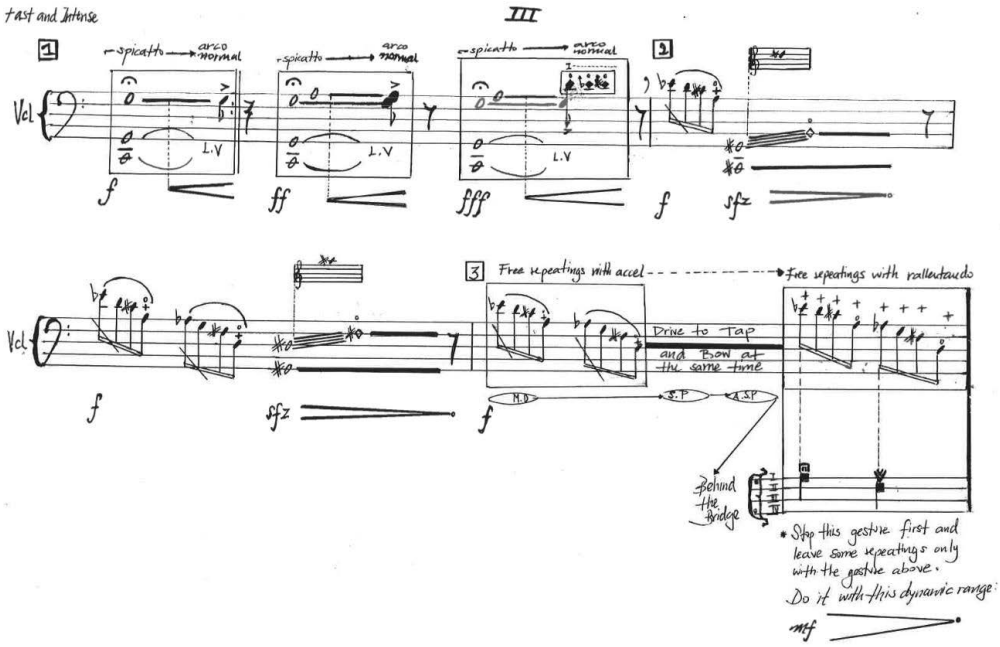
Ex. 4.101. *Detrás de la montaña (II)* by Castrillón (2011–12: 4).

Finally, the last section of movement *II* shows three microtonal gestures in descending *glissando* that lie on a harmonic sound. These gestures superimposed to the pedal generate a timbral contrast that somehow cross-fades with an extreme bow-position-shift gesture, which constitutes the last fragment of the piece. The gradual change from M.O to A.S.P keeps the filtering effect presented before. Furthermore, a graphic indicates that the bow direction must be continued to reach to the upper part of the fingerboard, which connects the filter effect with a granular sound that gradually disappears (see Ex. 4.102.) .



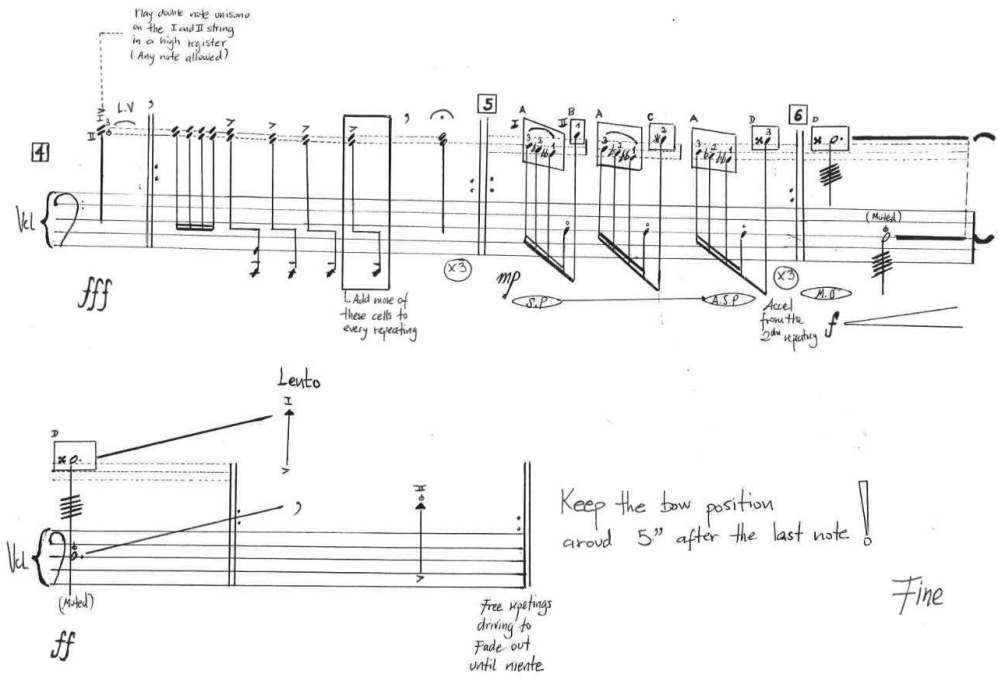
Ex. 102. *Detrás de la montaña (II)* by Castrillón (2011–12: 5).

Movement *III* has a similar structure organisation as movement *I.* There are six numbers that group six different phrases connected to each other under a *Fast and Intense* expressive suggestion that again must be decided by the performer. Number 1 displays three percussive and polyphonic gestures in *spiccato* that transform gradually into *arco normal.* Number 2 reexposes the main trill cell used in the first and second movement and introduces an *ostinato* that continues until the end of number 3. This number presents a remarkable sonic feature within the piece, which is a gradual double timbral modulation. One occurs in the left hand and is achieved by changing the pressure of the fingers and gradually moving to a tapping technique. The other modulation is seen in the bow transition from A.S.P to the *behind the bridge* position (see Ex. 4.103.).



Ex. 4.103. *Detrás de la montaña (III)* by Castrillón (2011–12: 6), number 1–3.

Number 4 requires the performer to find a unison double stop on the first and second string within the high register. This action repeats several times and interacts with a double-stopped fifth executed on the third and forth open strings. The dynamic of this section is *fff,* which maintains the intensity and generates a contrast in the resonance and timbre of the two double-stropped gestures. Namely, the highest is bright and sharp and the lowest is rather dark. On the other hand, number 5 has a passage in *mp* that presents a slight timbral modulation from S.P to A.S.P applied to a repetitive cell that accelerates towards the end and gradually varies the pitch procedure. The latter feature functions as a connection to number 6, which is a sort of coda that suggests a fast *tremolo* in double stops on the first and second string. Growing rapidly in volume and with a *glissando,* this gesture leads to a *Lento* fragment where the two notes move to the highest register possible on each string. The performer must then play the notes successively and repeat them freely but fading them out. Moreover, the piece is considered finished after a pure performance gesture that indicates maintaining the bow position after the last note for approximately five seconds (see Ex. 4.104.).



Ex. 4.104. *Detrás de la montaña (II)* by Castrillón (2011–12: 7), number 4– 6.

Detrás de la montaña requires the performer to have both a particular technical development and capacity for memorisation. On the other hand, the complexity of the timbral characteristics described above come from the performance process itself, which establishes a random sound result. Namely, the piece indicates the actions that the cellist should execute instead of the precise pitches that will result. However, in a few passages the timbral and pitch procedures are specified to emphasise the difference between what should be and what should not be controlled by the cellist.

4.2.11. *Yo soy la selva/I am the jungle* by Sergio Andrés Castrillón Arcila

This piece was composed between January and February 2014 in Manizales (Colombia). Although it is dedicated to the Colombian cellist Sebastian Castrillón, the official premiere was by the composer himself in October the same year during the Korvat Auki[45] autumn concert at Forumbox

[45] Korvat Auki ry is one of the main associations of Finnish and Finland-based composers, which supports and promotes contemporary music. (See more: korvatauki.net)

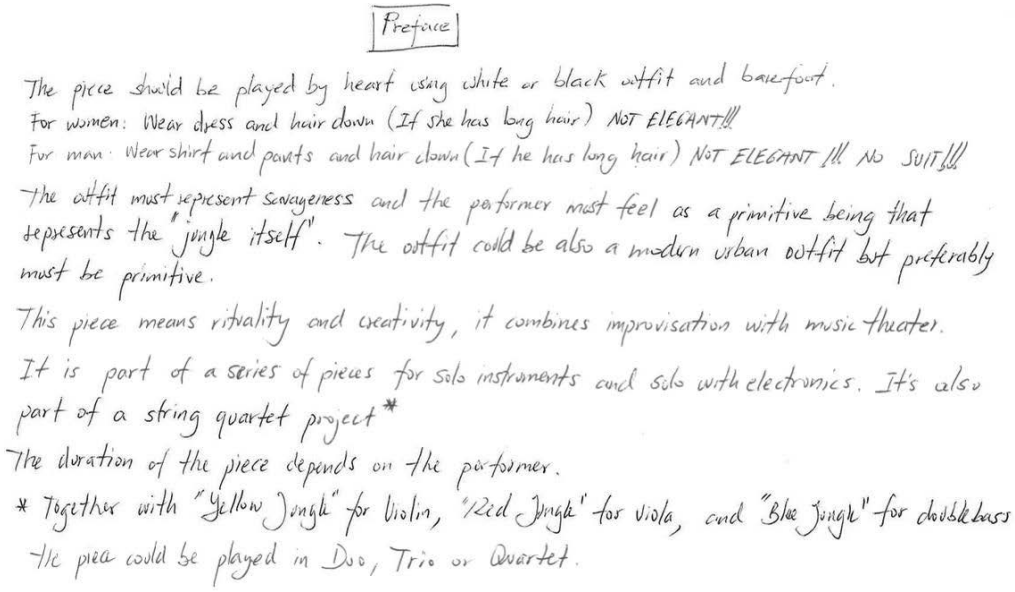
gallery in Helsinki. However, the score of *I am the Jungle* and a prepremiere performance was included during the project *Sound Exhibition (for solo cello)* at the gallery Third Space[46] in August 2014 in Helsinki. Curator Daniel Malpica (Third Space: 2014) described the project as follows:

> *Sound Exhibition (For solo cello)* comes from the concepts of musical graphic notation, soundscape and sound installation. Graphic scores from pieces composed by Sergio Castrillón, over the last two years, will be part of the installation and can be manipulated by visitors with color pencils. […] A daily concert will be held at Third Space during August 5, 6, 7 & 8. […] A sound installation will be open to visitors with the sound of a mix tape from the recordings during the previous concerts […] in August 11, 12, 13 & 14 […]

I am the Jungle therefore displays a combination of graphic, traditional, and word-action notation. The score is written by hand and constitutes a sort of drawing-visual art piece that can be represented with sound in real time. On the other hand, the composition procedures were completely improvisational as there was not any preconceived idea connected to how the piece should be before the writing process and the whole composition was finished at once. In fact, this work was composed by coincidence—or by chance—as an ongoing composition exercise where the main goals were to write down immediate ideas and develop them to finish an entire piece in a single day. Hence, *I am the Jungle* was completed in approximately five hours and the immediate ideas written down and developed were inspired by looking at the score of *Red Jungle*, a piece for solo viola that was composed few months before that fell on the floor by accident. Namely, this piece is the result of an approach to a way of improvisation in composition, taking advantage of an unpredictable situation and even performing a process of composition within five hours.

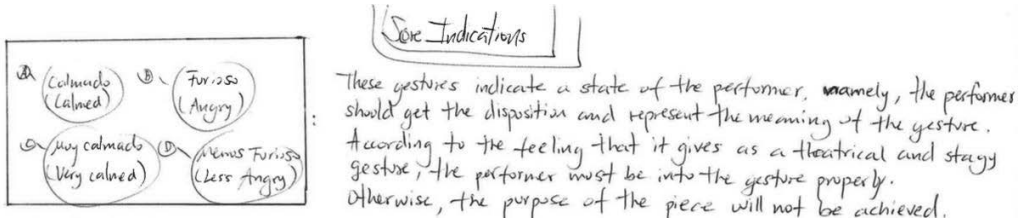
After this peculiar set of circumstances, within a few months the project was extended to a series of multidisciplinary pieces that can be played in several formats and that include conceptual art, music theatre, and visual art elements. For instance, together with *Yellow Jungle* for violin, *Red Jungle* for viola, and *Blue Jungle* for double bass, *I am the Jungle* can be featured as a solo, duo, trio, and quartet piece. According to the preface written in the score, these pieces mean rituality and creativity and require the performer to make decisions, such as the length of the piece. Furthermore, they include improvisational procedures and compulsory performance indications, such as outfit codes and hairstyle suggestions (see Ex. 4.105.).

[46] Third space is an art gallery run independently by a group of artists based in Helsinki. (See more: http://www.th1rdspac3.com/third-space.html)



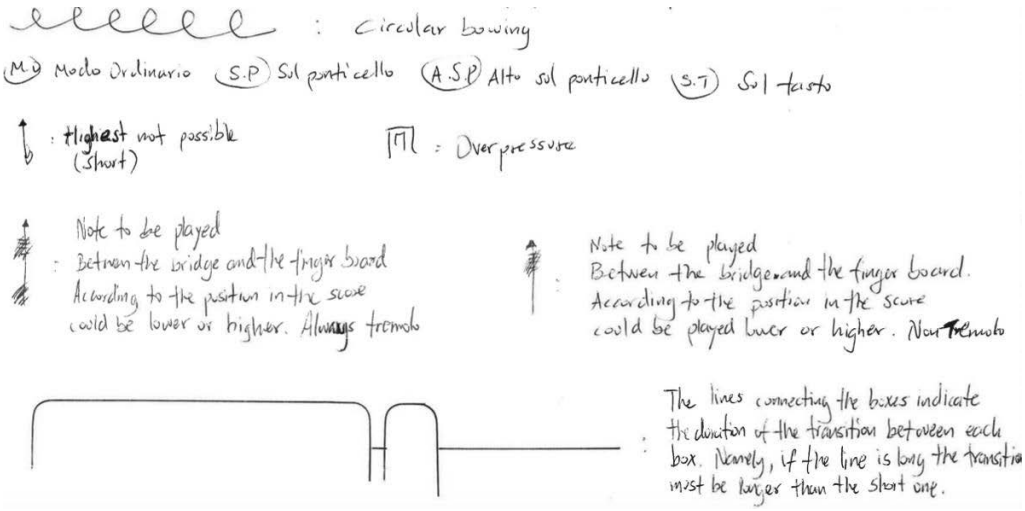
Ex. 4.105. *I am the Jungle* by Castrillón (2014: Preface)

On the other hand, all the pieces strictly require the performer to embody four different emotional states, namely as *Calmed, Angry, Very Calmed*, and *Less Angry* (see Ex. 4.106.).



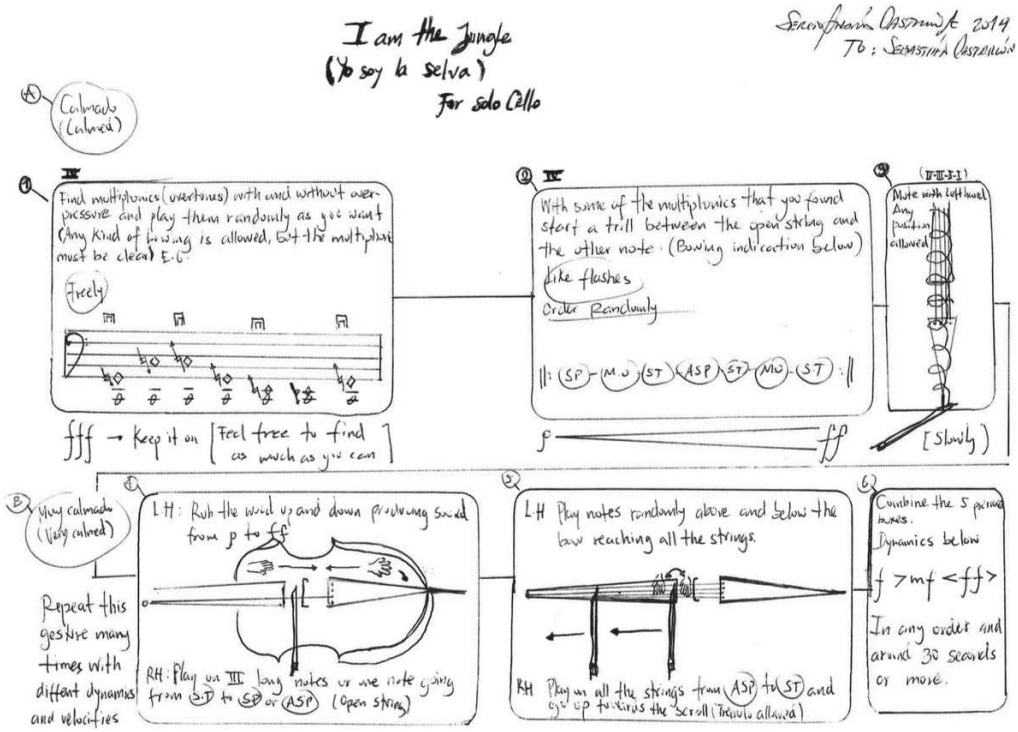
Ex. 4.106. *I am the Jungle* by Castrillón (2014: Score Indications).

In terms of playing techniques and notation, the four pieces include convergent features such as bow articulations, bow strokes, bow positions, pitch location, and graphics (see Ex. 4.107.).



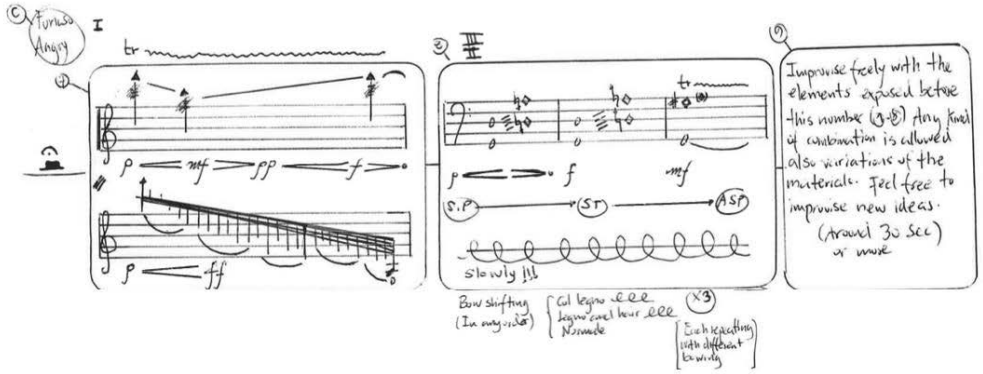
Ex. 4.107. *I am the Jungle* by Castrillón (2014: Score Indications).

I am the Jungle is organised in four parts, each one divided in three numbered boxes. The parts represent a specific emotional state and present different timbral procedures and playing techniques. For instance, part A should by played embodying a *Calmed* feeling and suggests in box 1 a passage of multiphonics in *fff* with different bow pressure and bow techniques, which should be decided by the performer. Box 2 indicates a trilled gesture with constant bow position shifting and a *crescendo* from *p* to *ff*. Finally, box 3 presents a circular bowing passage ranging from the endpin up to the nut of the cello, while the left hand should mute the strings and move randomly along them. All the gestures and techniques applied to these three passages confer to part A a sonic atmosphere of noise and present different timbral modulations in which the sound result is randomised by the pitch procedures. In contrast, part B is to be played into a *Very Calmed* state. Box 4 presents a passage where two timbral planes are juxtaposed. One is a continuous open string sound and the other is a sort of squeaky sound that results by rubbing the frontal wood of the cello up and down with the left hand. Box 5 emphasises the random pitched idea of the piece by requiring the performer to move the bow over all the strings from A.S.P to S.T and even up towards the scroll, while the right hand should play notes randomly above and below the bow. This passage is followed by the last box of this part, which indicates the combination of the gestures used in all the previous boxes within a dynamic range of *f*, *mf,* and *ff* over 30 seconds or more (see Ex. 4.108.).



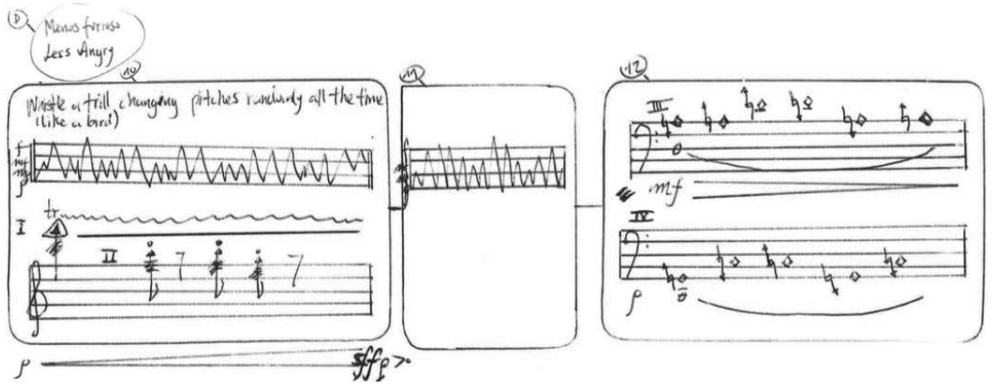
Ex. 4.108. *I am the Jungle* by Castrillón (2014: 1).

In contrast to part B, part C must be played with an *Angry* feeling. Box number 7 indicates two gestures. The first is a descending and ascending trilled *glissando* within the highest register that changes the dynamics through *crescendos* and *decrescendos.* The second gesture is a descending progression that increases volume and velocity from the highest register to the lowest. However, the performer is free to choose the pitches following five changes of bow direction. The powerful ending suggested in box 7 intends to connect rapidly with box 8, which shows the development of a double-stopped trill articulated under a bow position change and a shifting of bow techniques. The performer should play this passage three times but each time choosing a technique *among col legno* and circular bowing, *legno*, and hair in circular bowing, or *arco normale.* The intention of this passage is to vary the timbre three times using the same pitches. However, some of the timbral procedures in the bow techniques mentioned may change the pitch organisation as well. For instance, when the bow moves close to the bridge using the *col legno* technique, the high partials of the main notes are stimulated and are expressed smoothly adding other layers to the actual pitch. The last box of this part is number 9, which requires the cellist to improvise freely with the elements and materials used in box 7 and 8 for approximately 30 seconds. Furthermore, the performer is also encouraged to bring new ideas to the improvisation (see Ex. 4.109.).



Ex. 4.109. *I am the Jungle* by Castrillón (2014: 2).

The last part (D) suggests a *Less Angry* state and opens in box 10 with a double action that the performer should achieve simultaneously. One is a fragmented trilled passage in the highest register using natural harmonics and increasing the volume gradually from *p* to *sff* that suddenly goes to *p* towards the silence. The other action is a mouth whistle that has four different volume levels in which the performer should create a constant oscillation. This action connects to box 11, where only this gesture continues. Finally, box 12 re-exposes some of the multiphonics used in box 1 but with a variation in dynamics and articulation (see Ex. 4.110.).



Ex. 4.110. *I am the Jungle* by Castrillón (2014: 2).

I am the Jungle presents a complex timbral and extended playing techniques development, which includes constant timbral modulations and timbral polyphony processes, among others. Furthermore, according to this analysis there is a systemic use of the noise element that somehow gives the piece a wide range of noises with different pitches and even precise timbral features. On the other hand, the importance of the extramusical elements in this work expands the notion of a musical piece and takes it into the territory of performance, visual, and conceptual art, which also re-signifies and questions the role of the cellist.

5. WORKS FOR CELLO WITH ELECTRONIC MEDIA FROM 2000 TO 2015 BY COLOMBIAN COMPOSERS

5.1. List of compositions for cello with electronic media

The following list is organised in alphabetical order and includes the name and date of birth of the composer, followed by the title of the piece and year of composition. In case the composer has more than one piece, the pieces are listed in chronological order. The titles of most of the pieces appear in the language that the composers used. However, English was the language chosen to indicate the ensemble (for cello and electronics, etc.) that were written in any language other than English and Spanish. English was also used for the pieces that did not have any ensemble indication, which was given by the researcher with the permission of the composer[47].

Castrillón Arcila, Sergio Andrés (1981)

- *Enna Ira Ma* for cello and electronics (2010–11)

Méndez San Juan, Camilo (1977)

- *Plegaria Muda: Preludio* for cello and accelerometer (2012–13)

Suárez Cifuentes, Marco Antonio (1974)

- *Kärlek Splittring II* for cello with two bows and live electronics (2013)

Torres Cardona, Hector Fabio (1964)

- *Sed* para violonchelo y violonchelo procesado (2010)

Uribe, Matías (1983)

- *Ashtánga sádhana* Intermediación para violonchelo procesado, demostrador de coreografía y video mapping sobre el cuerpo (2013)

Vassilev, Nicolay (1982)

- *Sed* for cello and electronic device (2009)
- *Song of myself* for amplified cello, narrator, percussion and a track player (2011)

[47] It refers specifically to the piece *Sed* by NikolayVassilev.

5.2 Analysis of pieces for cello and electronic media

The following pieces are organised in chronological order according to the year of composition. These analyses aim to emphasise timbral subjects related mainly to the idea of timbral modulation, timbral polyphony, and timbral re-signification through the use of extended techniques (see 1. and 2.). Although all the pieces present in one way or another a search for timbral explorations, some pieces give special importance to these explorations, thus justifying the difference in scope of each analysis. Nevertheless, the analyses also highlight other features of the works, which are not necessarily comparable. Considering the variety of styles, compositional approaches, and for instance, the different methods of notation[48], each piece is analysed with the most appropriate methodology. On the other hand, due the to length of some of the pieces presented here, the fact that some works are in progress, the complexity that the inclusion of some multidisciplinary elements brings, and the use of electronic devices, this chapter intends to establish a rather preliminary analysis to be further developed in future studies. This is the case for *Plegaría Muda* by Méndez San Juan*, Ashtanga* by Uribe, and *Kärlek Splittring II* by Súarez Cifuentes.

5.2.1. *Sed* by Nicolay Vassilev

Before beginning the analysis of *Sed* it is necessary to consider some aspects about the composer's life, which are very important in terms of his artistic development. Vassilev was born in Plovdiv (Bulgaria) in 1983 but moved to Medellín (Colombia) at the age of nine. His parents are musicians both currently living in Colombia and working as teachers at the *Universidad de Antioquia* conservatory. Although Vassilev moved from Colombia at the age of 18 he holds Colombian nationality and keeps an important connection with his second country (Vassilev 2017: VIIb: 4).

Vassilev is an interesting case connected to the internationalisation of the Colombian musician (see 3.3.) and is also an example of how globalisation has strongly influenced his work. By the age of 34 Vassilev had lived in and studied music in different institutions in Bulgaria, Colombia, USA, Sweden, and Spain, where he is currently based. Within this international experience he has developed his career as cellist, composer, improviser, educator and researcher, not only in academic spheres but also in underground and mainstream arenas. Nevertheless, his approach to composition has been purely through instrumental praxis, which is increasingly a common feature within new generations of musicians today. Namely, while he has several degrees and employs academic approaches to cello performance, improvisation, and research, Vassilev does not have a degree in composition. Nonetheless, this fact does not mean that his work as composer is less important. On the contrary, this emphasises the paradigm shift in musicianship that already from the second half of the 20th century questions the musician's roles and practices.

[48] This also applies for the pieces that are not notated or written but only recorded.

Vassilev's multifaceted career also includes work as a music producer and composer of commercial audiovisual projects, and as singer-songwriter and guitarist of the rock band PUSHEK. Such alternative practices have influenced his cello and compositional path and vice versa. Therefore, Vassilev's work can be established under the category of composer-performer, which encompasses diverse paths and music genres such as the *processed cello* (named by Vassilev) and free improvisation.

Processed cello is one of Vassilev's musical paths, in which he composes and performs pieces for cello processed with electronic devices as soloist. However, his concept of soloist is expanded as most of the processes he uses are harmonisations and juxtapositions of several melodic layers. Hence, the traditional conception of cello and the practice of cello performance are somehow re-signified. On the other hand, in most cases the electronic setting of Vassilev's *procesed cello* consists of connecting an acoustic cello to a pedal board with digital sound effects originally conceived for electric guitar. The effects employed include delay, distortion, flanger, reverb, and loop, which are manipulated with different parameters. This is a clear example of instrumental deconstruction through both the process of re-instrumentation and timbral re-signification. Regarding the setting and idea of the *processed cello,* in an interview with by Elena Martín at the Radio University of Salamanca in May 2013 Vassilev argues:

> I am interested in the extensions of the instruments. Therefore I wanted to develop what I call a *processed cello* […] which consists of expanding the sound of the cello using amplification and taking advantage of new technologies. […] I amplify my cello from the bridge where there is a signal receptor that goes to a sound processor, which is a loop that records tracks in real time and repeats them. On top of those tracks, which I manipulate freely, I can transform the sound of the cello to such an extent that its sound becomes unrecognizable. Hence, the sound of the cello is modified through the use of several sound effects.

Most of the pieces that resulted after the idea of *processed cello* are compositions in real time and improvisations. Accordingly, there are no written scores[49] as Vassilev works through memorisation and recordings[50]. These pieces present a particular common ground in terms of form and expression. For instance, structure is mainly developed around symmetric phrases and a sort of verse and chorus, as in pop songs. There is a recurrent use of rhythmic *ostinati* in fifth riffs, which have clearly an accompaniment function and highlights the strong influence of rock music within his work.

Unlike the other Colombian composers that have written pieces for solo cello and cello with electronics in the 21st century, Vassilev resignifies the timbre of the instrument mainly by the use of electronic devices rather than through extended playing techniques. Moreover, in some cases

[49] This does not apply to *Song of myself*, which has a very detailed score and a different compositional process.

[50] These recordings are not published yet under any music label or online music platform. They have been provided to me by the composer only for research proposes.

the organic sound of the acoustic cello prevails and merges with the electronic processes, and in other cases it is completely deconstructed. However, the timbral treatment and the use of the electronic devices developed by Vassilev in his music can be considered as another extended technique, not from the playing techniques themselves but from his conception of the sound.

Therefore, all these factors underline the personal features that Vassilev brings as a composer-performer, which can be considered an advantage in terms of authenticity and the development of a unique musical language. Furthermore, his work constantly questions the borders between composition, composition in real time, and improvisation, since all of them are involved in both his creative processes and the results. For instance, *Sed* was composed in 2009 in Salamanca (Spain) while the composer was pursuing advanced cello studies with Aldo Mata and includes instant composition and improvisational procedures registered in a real-time recording session and extended techniques processed with different effects. According to Vassilev:

> *Sed* was an improvisation, I recorded whatever that came to my mind in that moment and started to build up loops and to duplicate the main theme in octaves. The piece starts with *col legno* and the effects as well as the recording set up […] are the same that I used in *Song of Myself* […] (Interview VIIb: 3)

Another important feature related to the creative process of *Sed* is the interaction of improvisation and instant composition elements within a rock-song style, not only sonically but also in terms of form. For instance, the piece has a symmetric 4/4 bar measure development between the phrases and there is a clear *intro*, *verse*, *chorus*, and *outro*. However, most of the parts appear independently and continue until the end of the piece, which means that Vassilev superimposes layers one by one with different functionalities rather than interweaving the parts as in a regular song organisation. On the other hand, *Sed* is based on a repetitive and non-modulative tonal structure in C minor. The intro is a double-stopped power-fifth riff in the lowest register that develops a syncopated *ostinato* in two bars. This *ostinato* appears alone for two bars until the first part of the verse, which is a slow syncopated melody, and appears and repeats twice. The second part of the verse is also a syncopated melody but unlike the first one this is conclusive. Through the use of delays, these two melodies start to create different layers or sorts of counterpoint that are later overlapped by a drum set sample, which brings another sonic characteristic to the piece and establishes it strongly within the rock genre. After the drum set sample, a few variations in the distortion effects appear in pedals tones and high pitches, generating a powerful and compact sound. At the end of the piece, all the elements used before are cut, leaving just a distorted pedal sound that works as an outro that is heard alone during over bars.

Vassilev's *processed cello* is an example of how a particular electronic setting provides a new sort of sonic identity to the instrument using different music genres and languages. This is noticeable in general in all his cello pieces and in what he calls *sketched pieces,* which are mainly recorded improvisations where he experimented with his electronic set up and strongly developed

a cello-rock style. Among these pieces are: *Origin*, *Present, Precedencia* and *Vernacular*, all composed between 2009 and 2013.

5.2.2. *ENNA IRA MA* by Sergio Andrés Castrillón Arcila

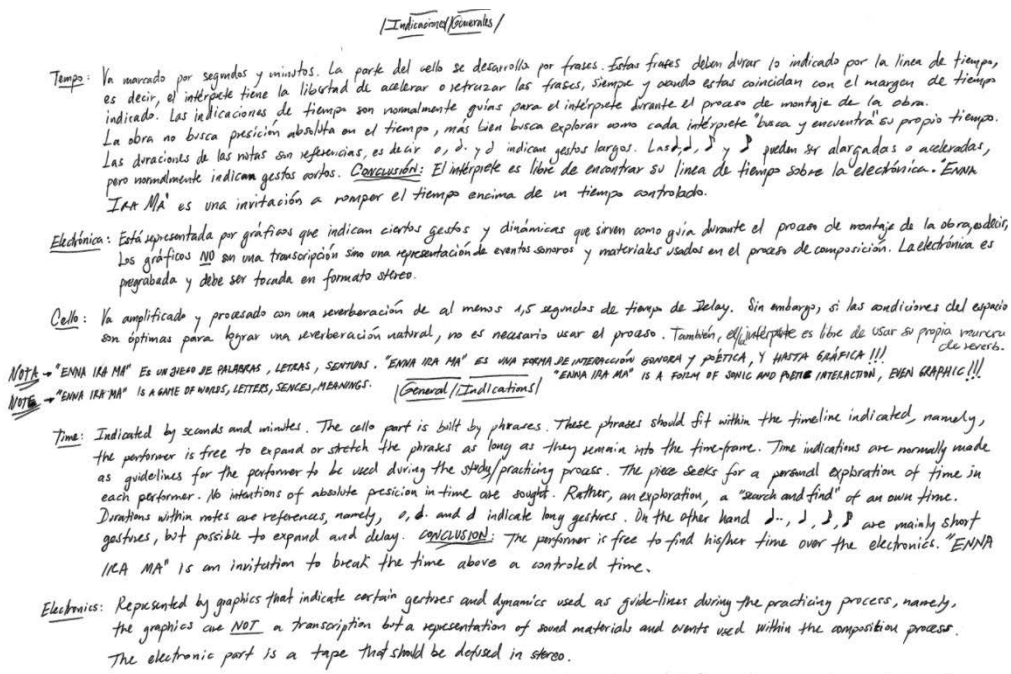
This piece was composed over winter 2010-2011 in France and premiered in Buenos Aires (Argentina) in May 2011 under the auspices of Sound Art and New Music *Tsonami Bs As*. This piece is part of a series of electronic works where the composer uses human voices in different languages as primary sound material. Namely, the special phonetic features of each language lead the timbral discourse, dramaturgy, and narrativity in the piece. *ENNA IRA MA* for cello and electronic fixed media (tape) explores Finnish language sounds from a poetic speech perspective. A female voice embodies the electronic part, which is constantly transformed and intervened with spatial and granulation processes. The cello part explores a wide pitch, timbre, and technique range. Both electronics and cello interact together by contrasting and merging and explore timbral modulations mainly independently. However, these modulations find convergent points between both electronics and cello where the sound becomes united to such an extent that it is difficult to distinguish the sound source in some parts of the piece.

ENNA IRA MA was developed under a multidisciplinary art concept that strongly quotes elements of conceptual art, aiming to approach a sort of *conceptual music* territory. For instance, the piece was written by hand and although the score uses both traditional and graphic-word notation, the latter is emphasised since the idea behind this notation is to represent with drawings the sounds of the electronic part and to explain with words many of the procedures that the performer should follow. Most of the indications are written with words (in Spanish and English) instead of notes and pitches and intend to generate confusion, contradictions, and reflections for the performer. This work thus seeks to open a different means of approaching a musical score. Moreover, the influence of electronic music, poetry, action performance, and visual arts in the composer's work was increasingly present in the pieces composed from 2011 onward due his active collaboration with artists from different fields and backgrounds.

At the same time, the composer's compositional path is transitioning from a structural style to a more experimental one, which is connected to a close relationship to the music of John Cage and Cornelius Cardew and to so-called free improvisation and to British experimental music of the second half of the 20th century. Furthermore, a strong interest in different philosophical and mystical views of time[51] arose and also influenced the composer's musical thinking. This piece therefore includes improvisational elements and chance operations and the performer is encouraged to make decisions on certain matters. For instance, the treatment of time is proportional, namely no measure signatures are used but rather a sort of division in seconds and minutes. The performer is thus required to fit the phrases and gestures of the cello part into a

[51] Related mainly to the view of time on Heraclitus and Joseph Campbell.

specific time frame. However, the conceptual idea of time lies on two different perspectives. One uses a controlled and measured time (on the electronic part) and the other invites the performer to break this controlled time by superimposing melodies and sound gestures (on the cello) that constantly stretch and shrink. This creates a sort of double-temporal-layered perception (see Ex. 5.1.).


/Indicaciones/Generales/

Tempo: Va marcado por segundos y minutos. La parte del cello se desarrolla por frases. Estas frases deben durar lo indicado por la línea de tiempo, es decir, el intérprete tiene la libertad de acelerar o retrazar las frases, siempre y cuando estas coincidan con el margen de tiempo indicado. Las indicaciones de tiempo son normalmente guías para el intérprete durante el proceso de montaje de la obra. La obra no busca precisión absoluta en el tiempo, más bien busca explorar como cada intérprete "busca y encuentra" su propio tiempo. Las duraciones de las notas son referencias, es decir o, 𝅗𝅥. y 𝅗𝅥 indican gestos largos. Las ♩, ♪ y 𝅘𝅥𝅯 pueden ser alargadas o aceleradas, pero normalmente indican gestos cortos. Conclusión: El intérprete es libre de encontrar su línea de tiempo sobre la electrónica. "ENNA IRA MA" es una invitación a romper el tiempo encima de un tiempo controlado.

Electrónica: Está representada por gráficos que indican ciertos gestos y dinámicas que sirven como guía durante el proceso de montaje de la obra, además, los gráficos NO son una transcripción sino una representación de eventos sonoros y materiales usados en el proceso de composición. La electrónica es pregrabada y debe ser tocada en formato stereo.

Cello: Va amplificado y procesado con una reverberación de al menos 1,5 segundos de tiempo de Delay. Sin embargo, si las condiciones del espacio son óptimas para lograr una reverberación natural, no es necesario usar el proceso. También, el intérprete es libre de usar su propia reverb.

NOTA → "ENNA IRA MA" ES UN JUEGO DE PALABRAS, LETRAS, SENTIDOS. "ENNA IRA MA" ES UNA FORMA DE INTERACCIÓN SONORA Y POÉTICA, Y HASTA GRÁFICA !!!

NOTE → "ENNA IRA MA" IS A GAME OF WORDS, LETTERS, SENSES, MEANINGS. "ENNA IRA MA" IS A FORM OF SONIC AND POETIC INTERACTION, EVEN GRAPHIC !!!

/General/Indications/

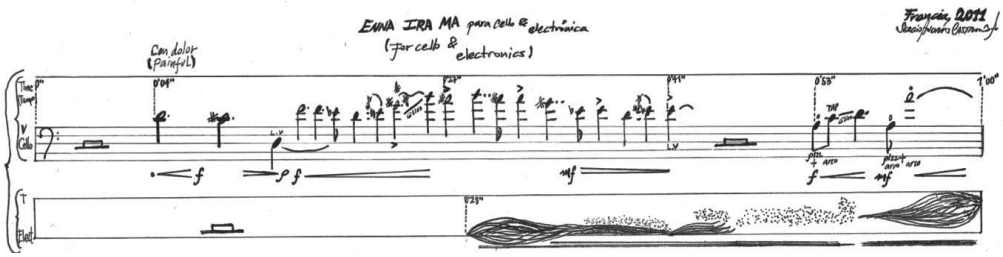
Time: Indicated by seconds and minutes. The cello part is built by phrases. These phrases should fit within the timeline indicated, namely, the performer is free to expand or stretch the phrases as long as they remain into the time-frame. Time indications are normally made as guidelines for the performer to be used during the study/practicing process. The piece seeks for a personal exploration of time in each performer. No intentions of absolute precision in time are sought. Rather, an exploration, a "search and find" of an own time. Durations within notes are references, namely, o, 𝅗𝅥. and 𝅗𝅥 indicate long gestures. On the other hand ♩., ♪, 𝅘𝅥𝅯, 𝅘𝅥𝅰 are mainly short gestures, but possible to expand and delay. CONCLUSION: The performer is free to find his/her time over the electronics. "ENNA IRA MA" is an invitation to break the time above a controled time.

Electronics: Represented by graphics that indicate certain gestures and dynamics used as guide-lines during the practicing process, namely, the graphics are NOT a transcription but a representation of sound materials and events used within the composition process. The electronic part is a tape that should be defused in stereo.

Cello: Should be amplified and include a reverb with at least 1,5 sec Delay time. However, if the room/space permits a natural reverb, the process in not needed. Also, the performer is free to explore and find her/his own reverb parameters.

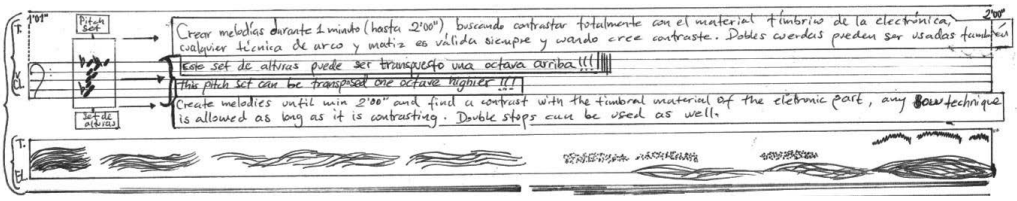
Ex. 5.1. *ENNA IRA MA* by Castrillón (2010–11: Preface).

The length of the piece is 6’15’’ and has six parts. The first one starts with a solo cello phrase within the middle-high register that develops diatonically until the end of the part, where an octave interval connects to the second part. The expression suggested is *painful* and continues throughout the whole piece. Among the extended techniques used in this passage are left-hand *pizzicato* combined with bow strokes, tapping, and *glissando*. The electronic part consists of different granulated layers that appear, disappear, and transform constantly from the beginning to the end of the whole piece. In this section there are three main materials: a low-pitched pedal, a sort of water wave that develops within different dynamic and pitch parameters, and a high-pitched sequence of extremely short attacks that move continuously in different space planes (see Ex. 5.2.).



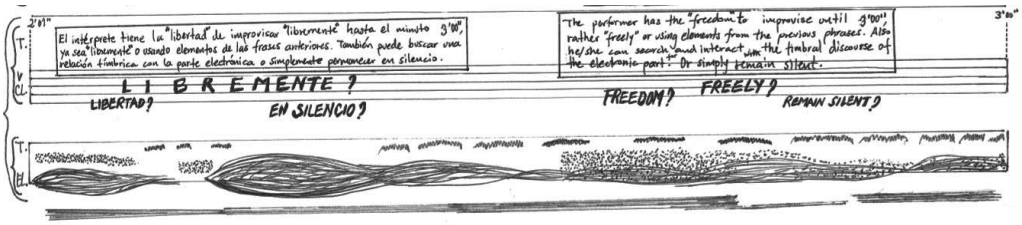
Ex. 5.2. *ENNA IRA MA* by Castrillón (2010–11: 1).

The second part presents a set of pitches for the cellist to create melodies over a one-minute time frame using any kind of bow technique. However, there is a specific requirement regarding the techniques and timbral development for the cello part, which is to establish contrast between the cello and the electronic sound materials mentioned above, which become more and more complex due extreme intensity changes (see Ex. 5.3.).



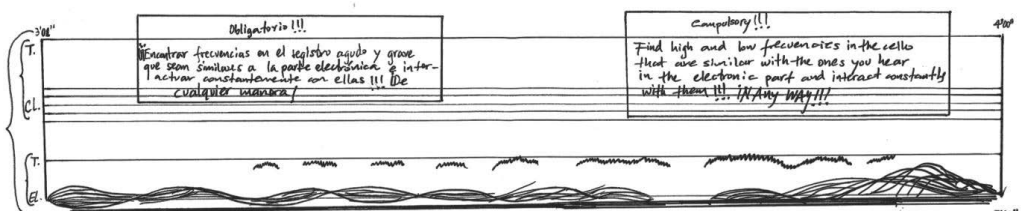
Ex. 5.3. *ENNA IRA MA* by Castrillón (2010–11: 1).

Within the third part, the electronics increase rapidly in intensity, introducing a higher-pitched material that oscillates and moves gradually and randomly from left to right. At the same time the low pedal develops into many superimposed layers but maintaining the sort of drone atmosphere. On the other hand, the performer is encouraged to improvise freely or imitate the sound materials of the electronics and to remain silent over one minute. In this part there are three signs written as questions: *FREELY? FREEDOM? REMAIN SILENT?*, which are sorts of reflections for the performer to analyse while the practicing the piece (see Ex. 5.4.).



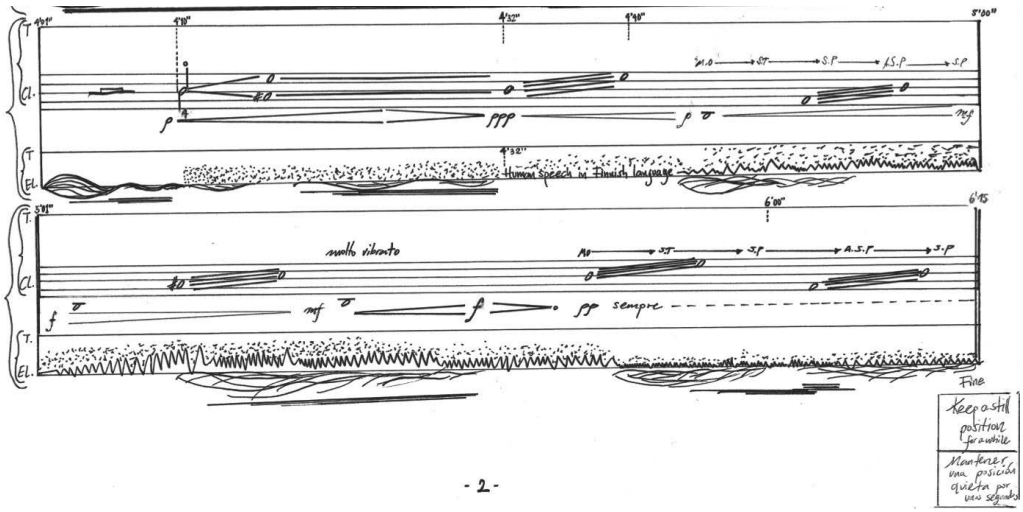
Ex. 5.4. *ENNA IRA MA* by Castrillón (2010–11: 1).

The fourth part on *ENNA IRA MA* requires the cellist to find the frequencies within the low and high register and to constantly interact with the low and high ones coming from the electronics over one minute. This indicates that the performer should react after a listening exercise from the electronics establishing a communication based on the imitation of pitch. On top of this, the electronic part reaches a high peak in terms of intensity and density. Furthermore, the spatial development becomes more complex due the wide movement of all the sound materials. (see Ex. 5.5.)



Ex. 5.5. *ENNA IRA MA* by Castrillón (2010–11: 2).

During the last part of the piece both cello and electronics blend timbrally in expression and in dynamics, creating a solid mass of background sound that accompanies another prerecorded element: a female voice using Finnish language. This element is considered a strong poetic material not only because of the speech expression used but also due its content, which in English means: "I do not care about the past, I do not care about the future, because time really does not exist". This phrase is repeated several times within different tone and dynamic expressions and paraphrased constantly, deconstructed, and transformed through different spatial movements such as panning and the use of delays. On the other hand, the performer follows the dynamic range of the electronics and plays gestures that present timbral modulations through shifting bow positions in trills and single long notes. At the end a still position should be achieved *for a while*, which again emphasises the interest of the composer in the idea of time and suggests an action-performance gesture (see Ex. 5.6.).



Ex. 5.6. *ENNA IRA MA* by Castrillón (2010–11: 2).

5.2.3. *Song of Myself* by Nicolay Vassilev

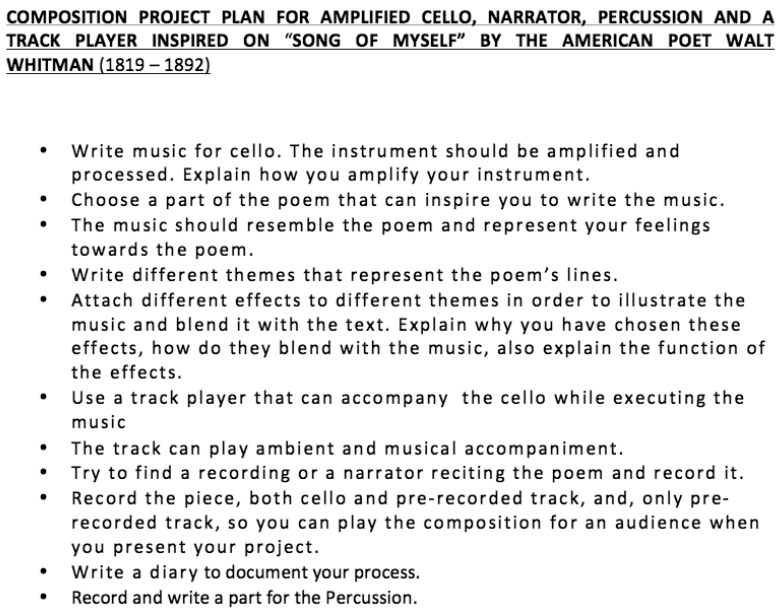
The composition process of the piece began in September 2010 after a meeting with Harald Stenström (Vassilev's masters' thesis supervisor) and was finished with its premiere on 17 November 2011 at the Academy of Music and Drama in Gothenburg (Sweden) in the composer's master's thesis concert. In addition to the *processed cello* setting developed by Vassilev (see 5.2.1.), *Song of Myself* includes a narrator, a percussionist, and a track player. Hence, the official ensemble for the piece is for amplified cello, narrator, percussion and a track player. The premiere performance featured the composer himself on cello, Leif Moxon as narrator, Alberto García de León on percussion, and Luigi Bozzolan as track player. (Vassilev 2011: 4.)

The creative process of this piece is based on the idea of a composition diary, which also included autoethnographic research. Moreover, these two processes strongly interacted with an extramusical element, specifically Walt Whitman's poem *Song of Myself.* Regarding these matters Vassilev (2011: 5) argues:

> […] The way I decided to write my thesis was in a diary-like form. The reason why I chose this is because I wanted to document the process of how I compose a piece step by step, taking notes right away until my daily work. Please, notice that I am analysing the work of a composer as a form of research. This composer happens to be me, thus, I refer to myself constantly. My work is a subjective introspection of the process of composition […] I started to seek for different reasons to trigger my inspiration and outcome for my material. My first extra ingredient that popped out of my head was to have a recorded track playing along with the cello while executing the piece, this way the piece could have more ambience and some musical accompaniment. I also thought that

it would be great if I could seek inspiration in a poem, this way I could also follow some pre-established direction. I chose Walt Whitman's Song of Myself, a poem I read in the summer 2009 and I liked it a lot.

In additions to the latter ideas, Vassilev elaborated a detailed plan where he defined the instrumentation of the piece, some compositional procedures, and technical issues among others (see Fig. 5.1).



COMPOSITION PROJECT PLAN FOR AMPLIFIED CELLO, NARRATOR, PERCUSSION AND A TRACK PLAYER INSPIRED ON "SONG OF MYSELF" BY THE AMERICAN POET WALT WHITMAN (1819 – 1892)

- Write music for cello. The instrument should be amplified and processed. Explain how you amplify your instrument.
- Choose a part of the poem that can inspire you to write the music.
- The music should resemble the poem and represent your feelings towards the poem.
- Write different themes that represent the poem's lines.
- Attach different effects to different themes in order to illustrate the music and blend it with the text. Explain why you have chosen these effects, how do they blend with the music, also explain the function of the effects.
- Use a track player that can accompany the cello while executing the music
- The track can play ambient and musical accompaniment.
- Try to find a recording or a narrator reciting the poem and record it.
- Record the piece, both cello and pre-recorded track, and, only pre-recorded track, so you can play the composition for an audience when you present your project.
- Write a diary to document your process.
- Record and write a part for the Percussion.

Fig. 5.1. *Song of Myself* by Vassilev (2011: 5).

This project plan emphasises the composer's idea of a work that in addition to a creative process would be combined with research methods and hence would be a work on *artistic research.* The score of the piece therefore includes a preliminary text that explains and contextualises in detail the entire composition development and its basis through the diary-like form mentioned above. Although the period between the initiation and the premiere of the piece was over a year, the main creative work occurred over 10 weeks between 2010 and 2011.

The poem *Song of myself* is part of Whitman's work *Leaves of Grass* and consists of 52 songs. However, the composer decided to focus on the first song of this series, which is structured in four paragraphs written in the first person and addressed mainly to the second person of the singular (see Fig. 5.2) (Vassilev 2011: 6.).

Song of Myself

Song 1

PARAGRAPH 1:
I celebrate myself, and sing myself,
And what I assume you shall assume,
For every atom belonging to me as good belongs to you.

PARAGRAPH 2:
I loafe and invite my soul,
I lean and loafe at my ease observing a spear of summer grass.

PARAGRAPH 3:
My tongue, every atom of my blood, form'd from this soil, this air,
Born here of parents born here from parents the same, and their parents the same,
I, now thirty-seven years old in perfect health begin,
Hoping to cease not till death.

PARAGRAPH 4:

Creeds and schools in abeyance,
Retiring back a while sufficed at what they are, but never forgotten,
I harbor for good or bad, I permit to speak at every hazard,
Nature without check with original energy.

Fig. 5.2. *Song of Myself* by Vassilev (2011: 6).

Regarding the compositional process and its connection to Whitman's poem, Vassilev (2011: 7) claims:

> I chose for the main theme of my work a tiny piece of music that I wrote ten years ago. […] it is eight bars of music, just an idea that never came to completion, […] The reason why I decided this to be the main theme of my work, is because I thought it could be great if I could represent the poet's words with my music, thus, since the poem's name is Song for Myself, I decided to be literal and use a "Song" that I "myself" wrote. That way it could be literally be a Song of Myself.

Furthermore, the musical structure and the instrumentation of the piece are also strongly connected to the structure of the poem (see Fig. 5.3 and 5.4).

RESUMING THE PIECE

Song of Myself is a piece for amplified cello, narrator, percussion and a track player. The music is based on the poem by Walt Whitman. It derives from a single theme (Sketch Page 1, 8th Rec) which changes shapes. The theme is separated into figures that represent words. These figures also represent the phrases that refer to those words.

Figure A = First half of the Main theme. It stands for expressions which refer to "me".

Figure B = Second half of the main theme. It stands for expressions which refer to "you".

Figure C = Mixed element of Figure A and Figure B. It stands for expressions which refer to "me and you". It has two alterations: Figure C (Altered)[1] and Figure C (Altered)[2].

> **Figure C1** = It is the first half of *any* of the C Figures, be it Figure C, Figure C (Altered)[1] or Figure C (Altered)[2].
>
> **Figure C2** = It is the second half of *any* of the C Figures, be it Figure C, Figure C (Altered)[1] or Figure C (Altered)[2].

Figure D = Sliding chords, material for paragraph 2. It stands for the words *"observing a spear of summer grass"*.

Figure R = Random pitch, material for paragraph 2. It stand for the words *"I lean and loafe at my ease"*

Bass Line Figure=it is the bass line of the Main theme. It appears in the cadenza, and stands for the words *"Original Energy"*.

Fig. 5.3. *Song of Myself* by Vassilev (2011: 21).

SONG OF MYSELF by Walt Whitman
Map of FIGURES

Par. 1	I celebrate **myself**, and sing myself, And what I assume **you** shall assume, For every atom belonging to me as good belongs to **you**.	**Fig A** **Fig B** **+** **Fig C**
Par. 2	I loafe and invite my soul, I lean and loafe **at my ease** observing a **spear of summer grass.**	**Fig R** **Fig D**
Par. 3	My tongue, every **atom** of my blood, form'd from this soil, this air, Born here of parents born here from **parents the same**, and their parents the same, **I, now thirty-seven** years old in perfect health begin, Hoping to cease not till **death.**	**Fig C1** *Altered 2* **Fig C2** *Altered 2* **M.T.** **+** **Timpani** **Loop**
Par. 4	Creeds and schools in abeyance, Retiring back a while sufficed at what they are, but never forgotten, I harbor for good or bad, I permit to speak at every hazard, Nature without check with **original energy.**	**Bass** **from** **M.T.**

Fig. 5.4. *Song of Myself* by Vassilev (2011: 35).

The piece is divided in four movements. The first and the second and the second and the third are interspersed with a bridge, unlike the third and the fourth (see Fig. 5.5.).

THE PIECE'S FORM:

- **First Movement =** First Paragraph = Figures A, B, C
- *Bridge 1* = Inverted pitch values of First Movement
- **Second Movement =** Second Paragraph = Figures D and R
- *Bridge 2* = Improvisation on Marimba based on the Main Theme
- **Third Movement =** Third Paragraph = Figure C $(A)^2$ separated into Figure C1 and Figure C2. + Main Theme on Acoustic Cello
- **Fourth Movement** =Third and Fourth Paragraph =37 distorted Timpani Hits

Fig. 5.5. *Song of Myself* by Vassilev (2011: 22).

Regarding the instrumentation and performance features, the composer gives different instruments and sound effects to the performers to execute to expand the timbral palette within the piece. Due the complexity of certain passages, there are also specific roles or tasks given to each performer to facilitate communication among them.[52] (see Fig. 5.6.)

THE PIECE'S SET UP:

The cello is amplified and is processed through sound effects, except on the Main Theme. These effects are: Phaser, Flanger, Chorus, Delay and Distortion. The right amplifier and effect processor are to be chosen by the cellist.

The percussion plays on Tam-Tam, Timpani, Tibetan Bowl, Marimba and a Glass.

The Track Player plays 5 tracks throughout the piece regulating volume and giving entrances to the other players.

The narrator reads the poem when indicated.

Fig. 5.6. *Song of Myself* by Vassilev (2011: 22).

According to the video recording of the premiere of the piece[53], in addition to the musical tasks that the percussionist must execute, there is also an important scenic role embodied while moving from one instrument to another. On the other hand, the narrator represents a sort of hidden character reading the poem out of the scene. These two features give the piece a theatrical input. This feature, together with the inclusion of poetry and electronics achieved by different mediums, clearly categorise *Song of myself* as a cross-disciplinary work. Furthermore, this particular ensemble, timbral treatment, form, sound materials, and concept used in the piece seem to have brought a

[52] For more details about amplification and equipment requirements for the cello see (Vassilev 2011: 26, 27)

[53] https://www.youtube.com/watch?v=dIFLo5crwRs

sort of urban American impression even captured by different listeners (see Fig. 5.7). The composer argues:

> I have asked some professional musicians for an opinion on my music. None of them know each other, yet they all agree in that there is a fusion of urban American music. Through them I realized that I have seen Walt Whitman through the modern, urban world, and I have made music that sounds American, just like the poet himself.

"Nice effects and colors, creative. Good fusion of elements which are reminiscent of contemporary urban music. I get the idea of an "American" sound. In general I find the work beautiful, interesting and creative"

Moisés Bertrand, composer from Barcelona, Spain.

"It reminds me a little of some music of Frank Zappa"

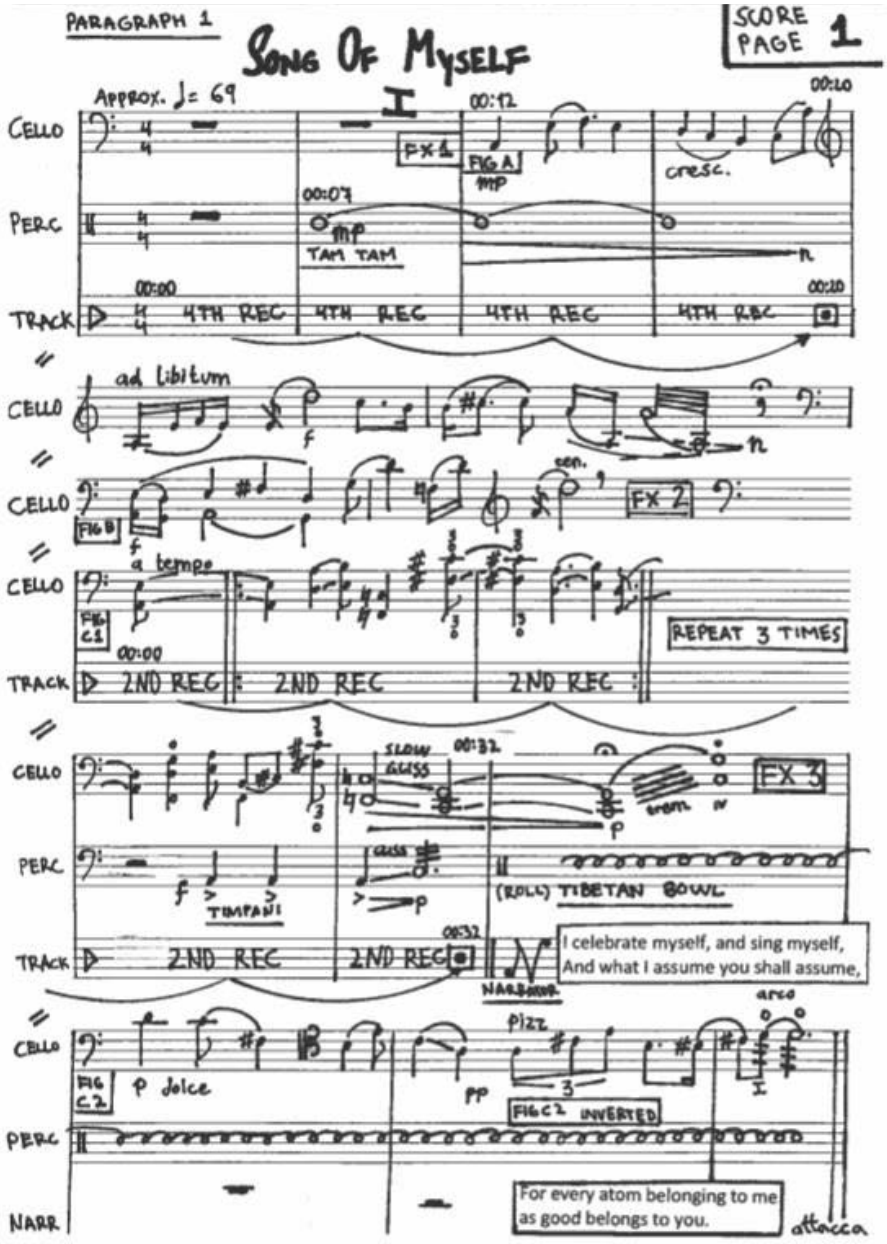
Daniel Berg, Marimba soloist;
Teacher in University College of Music in
Örebro and Gothenburg, Sweden

"I heard urban music; it reminds me of New York"

Rossi Dean, Double Bass in San Francisco Symphony Orchestra:

Fig. 5.7. *Song of Myself* by Vassilev (2011: 23).

Connecting the previous ideas to the treatment of the timbre, the piece presents in *movement I* a prerecorded track taken from a crowd—a sort of urban soundscape is the background of a phrase where a tam-tam strike decays gradually but keeps a thin resonant layer that blends in with the background sound. After these two gestures, the cello appears with a passage that in the beginning moves around minor, major, and pentatonic scales, using a diatonic conduction that is sometimes broken by sorts of connecting passages in parallel fifths and register changes. After a section for solo cello, a prerecorded track of a breakbeat appears and continues until the narrator entrance, which continues until the end of the movement. The percussion enters again after the prerecorded track but this time in a timpani passage followed by one on a Tibetan bowl, which lingers until the end (see Ex. 5.7.).



Ex. 5.7. *Song of Myself (paragraph 1)* by Vassilev (2011: 1).

The cello part requires two different sound effects, FX 1 & 3 (PHASER) and FX 2 (FLANGER). Both have specific parameters that generate sudden timbral modulations and changes in the harmonic spectrum and in the noise range (see Fig. 5.8).

FX 1 & 3 (PHASER)

	TYPE	VOLUME	BASS	MIDDLE	TREBLE	PRESENCE	MASTER	BRIGHT	MIC. SET	MIC. LEVEL	DIR. LEVEL	THRESHOLD	RELEASE	RATE	DEPTH	MANUAL	RESONANCE	DELAY TIME	FEEDBACK	LEVEL
PREAMP	JC-120	40	55	55	65	45	92	OFF												
SPEAKER SIM	MATCH								3CM	100	0									
NOISE SUPPRESSOR												30	30							
EFFECT	PHASER													35	55	45	50			
DELAY	SINGLE																	550MMS	20	30

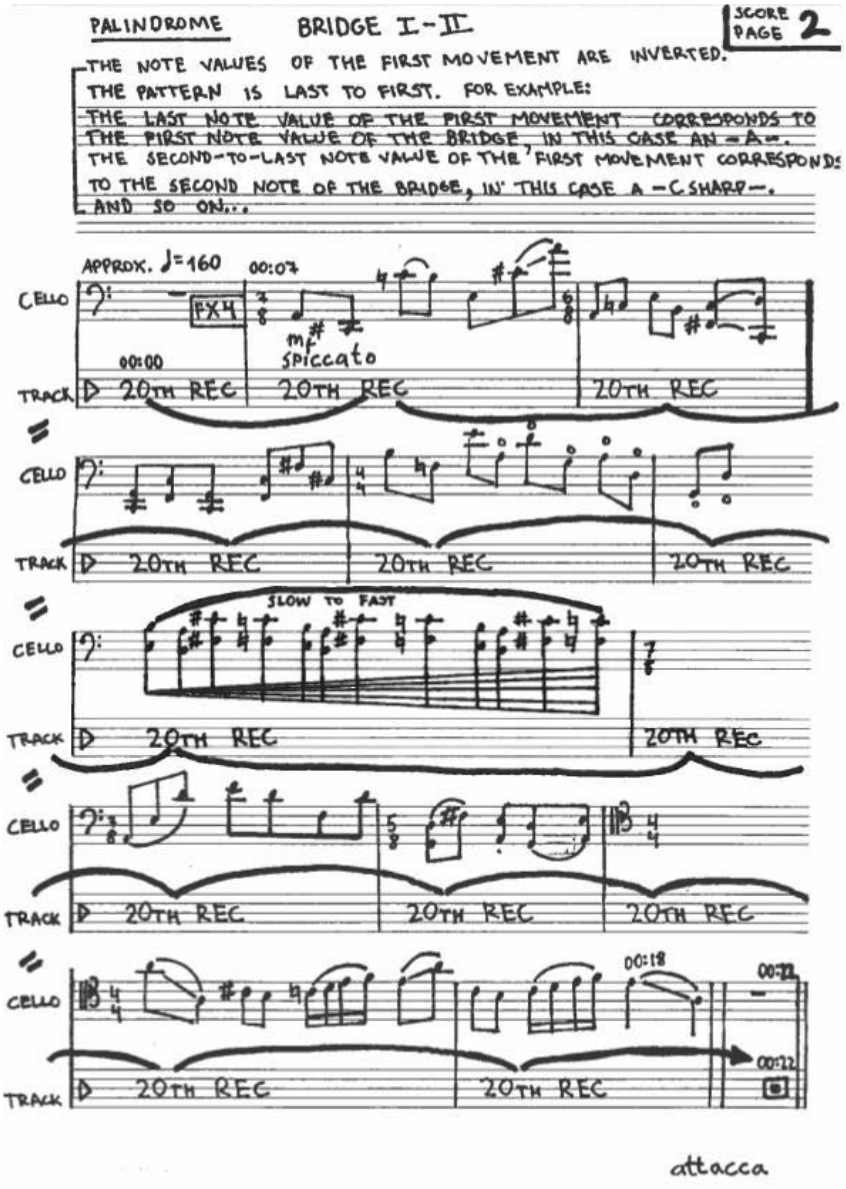
FX 2 (FLANGER)

	TYPE	VOLUME	BASS	MIDDLE	TREBLE	PRESENCE	MASTER	BRIGHT	MIC. SET	MIC. LEVEL	DIR. LEVEL	THRESHOLD	RELEASE	RATE	DEPTH	MANUAL	RESONANCE	DELAY TIME	FEEDBACK	LEVEL
PREAMP	CLEAN	50	55	50	55	70	52	ON												
SPEAKER SIM	METAL								3CMS	100	0									
NOISE SUPPRESSOR												40	30							
EFFECT	FLANGER													50	50	70	50			
DELAY	OFF																			

Fig. 5.8. *Song of Myself* by Vassilev (2011: 28).

Bridge I - II consists of a prerecorded track line based on a loop of the last phrase of the narrator ("as good belongs to you") and a mirrored version of the first movement's cello line. The track remains on loop until the end of the bridge, while the cello has a fast virtuoso passage in *spiccato,*

which is juxtaposed with left-hand techniques such as ascending and descending *glissandi,* double stops, and natural harmonics (see Ex. 5.8.).



Ex. 5.8. *Song of Myself (Bridge 1-II)* by Vassilev (2011: 2).

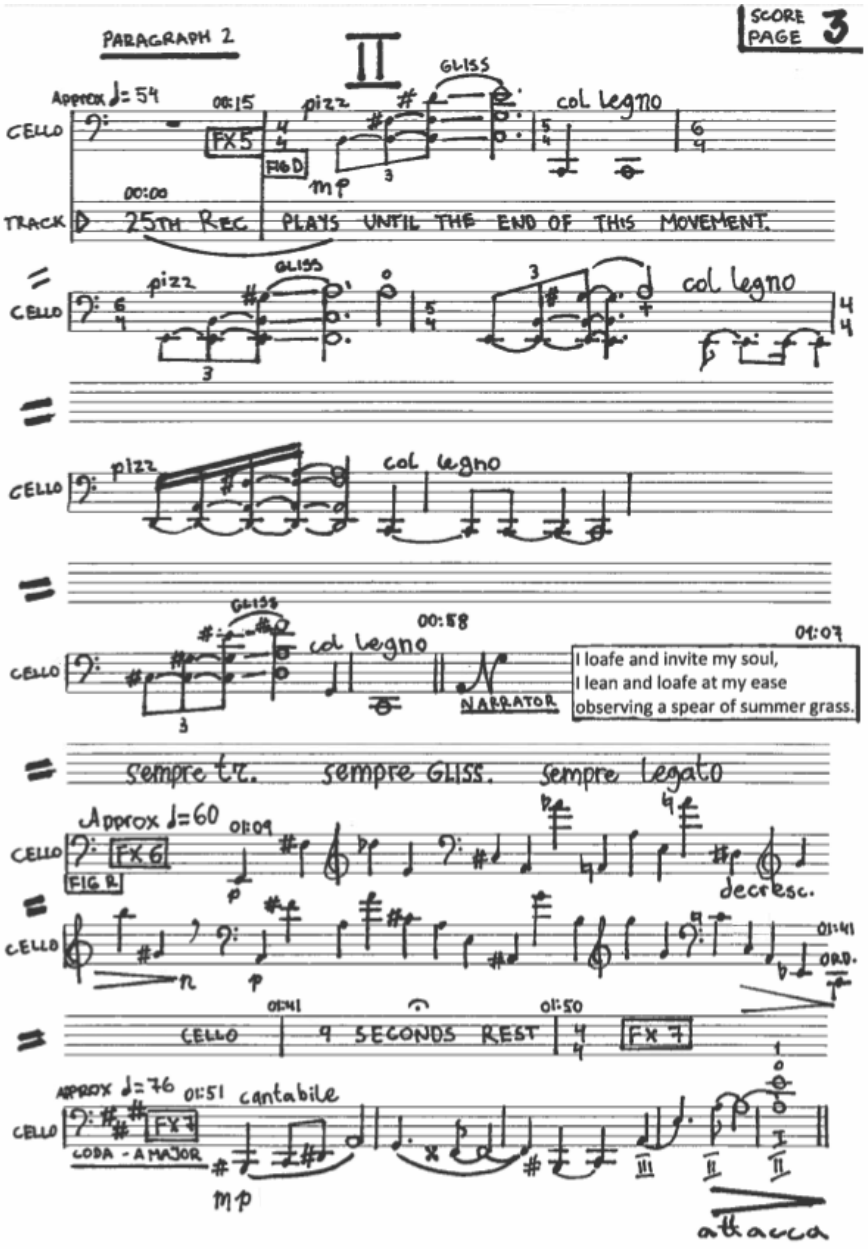
The effect used in the cello is a delay indicated as FX 4 and programmed with a rather short delay time and feedback. This gives to the cello and to the whole passage a sort of *twisted* and *blurred* sound difficult to distinguish while merging with the track loop. In other words, the composer creates a sound atmosphere of confusion and expectation (see Fig. 5.9.).

FX 4 (DELAY)

	TYPE	VOLUME	BASS	MIDDLE	TREBLE	PRESENCE	MASTER	BRIGHT	MIC. SET	MIC. LEVEL	DIR. LEVEL	THRESHOLD	RELEASE	RATE	DEPTH	MANUAL	RESONANCE	DELAY TIME	FEEDBACK	LEVEL
PREAMP	JC-120	42	55	55	65	40	95	OFF												
SPEAKER SIM	VODRIVE								4CM	100	0									
NOISE SUPPRESSOR												30	30							
EFFECT	CHORUS													35	55					100
DELAY	SINGLE																	500MS	20	24

Fig. 5.9. *Song of Myself* by Vassilev (2011: 29).

Movement II includes a track with pre recorded samples of nature that continues until the end. On top of this track there are three contrasting cello passages. The first shows a conversation between arpeggios (using *pizzicati* and *glissandi*) and bow strikes in *col legno.* After this passage, the cello remains silent while the narrator recites the second paragraph of the poem and returns the solo part back to the cello. The second passage is built by combining trills and *glissandi* on a melodic progression developed between the lowest and middle-high register of the instrument. The combination of all these techniques and articulations generate a sonority very similar to the one coming from the prerecorded track. In other words, by merging both sound materials the character of soundscape increases and gives a clearer reference to the sound of nature. The last passage comes after a solo track part and states a *cantabile* melody in A major, which in the beginning explores the lowest register of the cello and at the end reaches the middle-high register (see Ex. 5.11.).



Ex. 5.9. *Song of Myself (paragraph 2)* by Vassilev (2011: 3).

The effects required for the cello are (DISTORTION + CHORUS), (CHORUS), and (ECHO), which are indicated as FX 5, FX 6, and FX 7 respectively. One unique effect is used for each of the cello passages. Although this is a clear example of sudden timbral modulations, the outcome of the silences between each passage brings a smoother sound effect-change-perception, even if the parameters and nature of each effect are fairly different (see Fig. 5.10.).

FX 5 (DISTORTION + CHORUS)

	TYPE	VOLUME	BASS	MIDDLE	TREBLE	PRESENCE	MASTER	BRIGHT	MIC. SET	MIC. LEVEL	DIR. LEVEL	THRESHOLD	RELEASE	RATE	DEPTH	MANUAL	RESONANCE	DELAY TIME	FEEDBACK	LEVEL
PREAMP	SLDN	100	50	12	75	0	84													
SPEAKER SIM	METAL								7CM	100	0									
NOISE SUPPRESSOR												48	10							
EFFECT	CHORUS													10	50					100
DELAY	SINGLE																	500MS	20	50

FX 6 (CHORUS)

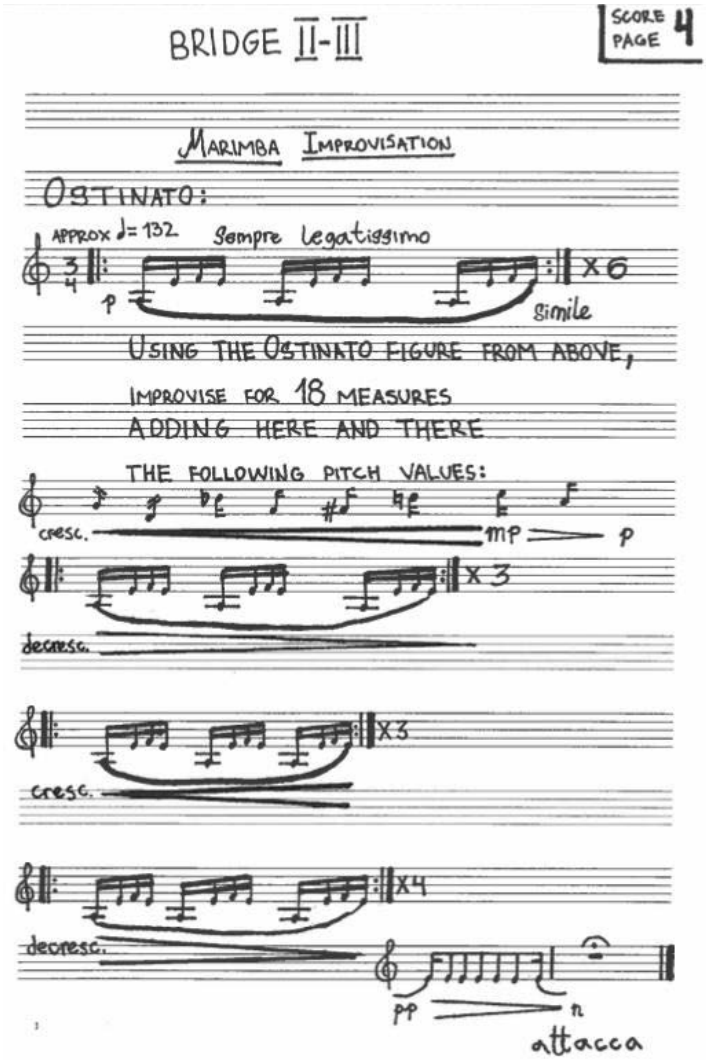
	TYPE	VOLUME	BASS	MIDDLE	TREBLE	PRESENCE	MASTER	BRIGHT	MIC. SET	MIC. LEVEL	DIR. LEVEL	THRESHOLD	RELEASE	RATE	DEPTH	MANUAL	RESONANCE	DELAY TIME	FEEDBACK	LEVEL
PREAMP	JC-120	35	70	60	55	71	80	OFF												
SPEAKER SIM	MSSTK								CENTER	100	0									
NOISE SUPPRESSOR	ON											40	30							
EFFECT	CHORUS													23	77					100
DELAY	SINGLE																	460	31	20

FX 7 (ECHO)

	TYPE	VOLUME	BASS	MIDDLE	TREBLE	PRESENCE	MASTER	BRIGHT	MIC. SET	MIC. LEVEL	DIR. LEVEL	THRESHOLD	RELEASE	RATE	DEPTH	MANUAL	RESONANCE	DELAY TIME	FEEDBACK	LEVEL
PREAMP	CLEAN	30	50	50	60	20	85	OFF												
SPEAKER SIM	TWIN								3CM	100	0									
NOISE SUPPRESSOR	ON											30	30							
EFFECT	TREMOLO													20	85					
DELAY	SINGLE																	500MS	49	40

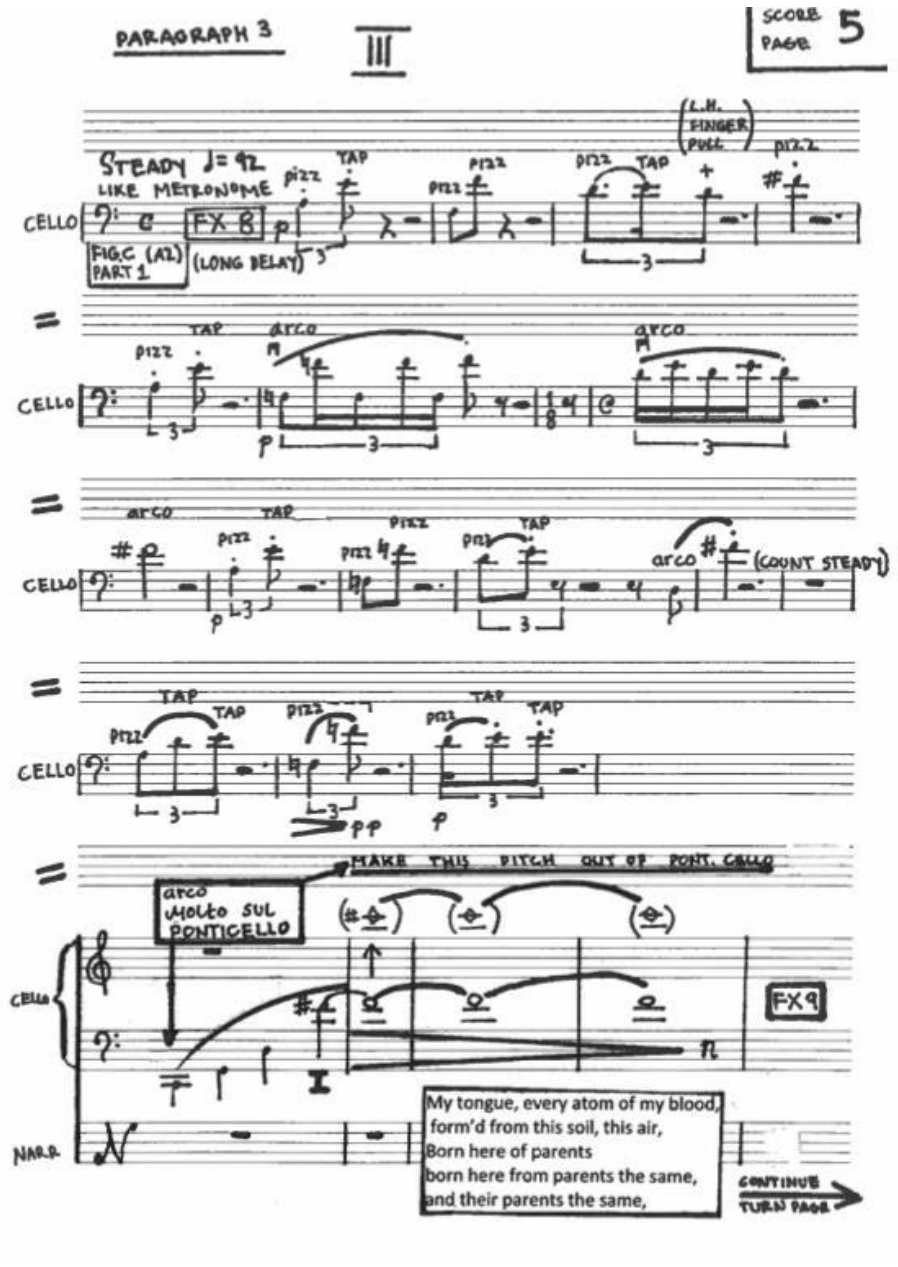
Fig. 5.10. *Song of Myself* by Vassilev (2011: 29, 30).

Bridge II-III is a solo marimba passage that includes an *ostinato* from the beginning until the end and juxtaposes an improvisational melodic line over 18 bars. After the improvised part, the *ostinato* returns but this time includes gradual dynamic changes (*decrescendo-crescendo-decrescendo*), which vary the attack, articulation, and even the timbre of the gesture (see Ex. 5.10.).



Ex. 5.10. *Song of Myself (Brigde II-III)* by Vassilev (2011: 4).

Movement III has three parts. The first starts with a solo cello that presents a conversation among little rhythmic cells using right-hand and left-hand *pizzicati*, tapping, and bow technique. This generates a polytimbral development as all techniques are interwoven. Towards the end of this section, an arpeggio on *molto sul ponticello* that reaches its last note on a harmonic sound creates a sort of metallic and sharp sonority that accompanies the first part of the third paragraph of the poem recited by the narrator (see Ex. 5.11).



Ex. 5.11. *Song of Myself (paragraph 3)* by Vassilev (2011: 5).

Furthermore, the use of a long delay (indicated as FX 8) creates in this section a timbral polyphony combining different techniques that generate different sounds and superimpose them constantly as a sort of loop effect. However, no loop pedal is used and rather the composer has all the resultant layers calculated in time. Therefore, he notates in the score the importance that this passage requires in terms of steady time when performed (see Fig. 5.11.).

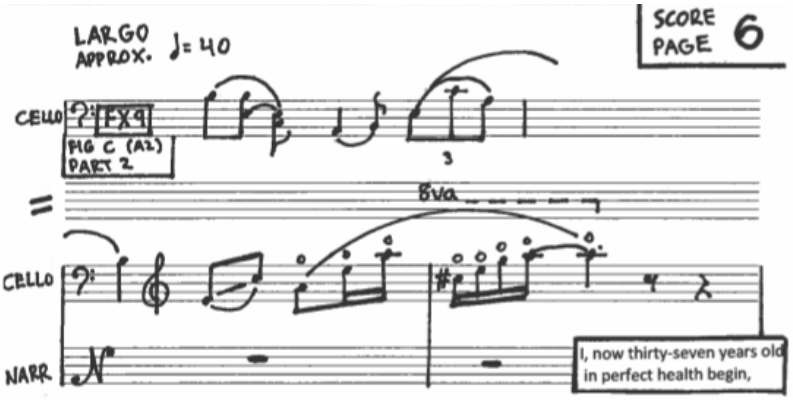
FX 8 (LONG DELAY)

It is very important that the cellist plays a steady tempo here (quarter = 92), because the delay effect is configured at that exact same speed, and if the player does not obey the tempo in a metronomic way, the effect would not make the intended rhythms.

	TYPE	VOLUME	BASS	MIDDLE	TREBLE	PRESENCE	MASTER	BRIGHT	MIC. SET	MIC. LEVEL	DIR. LEVEL	THRESHOLD	RELEASE	RATE	ATTACK	SUSTAIN	RESONANCE	DELAY TIME	FEEDBACK	LEVEL
PREAMP	JC-120	55	60	50	63	53	75	OFF												
SPEAKER SIM	MS STK								CENTER	99	0									
NOISE SUPPRESSOR	ON											40	30							
EFFECT	COMPRESSOR														100	44				80
DELAY	SINGLE																	639 MS	73	96

Fig. 5.11. *Song of Myself* by Vassilev (2011: 31).

The second part of movement III is a slow melodic passage that descends and ascends ranging from the low to the middle-high register of the instrument. The last phrase of this passage includes an ascending *glissando* and an arpeggio in natural harmonics; hence the composer again gives a different timbre to each phrase. Finally, the penultimate fragment of the third paragraph of the poem overlaps with the last note played by the cello (see Ex. 5.12.).



Ex. 5.12. *Song of Myself (paragraph 3)* by Vassilev (2011: 6).

The effect required is (DISTORTION), indicated as FX 9. This process inputs to the passage a strong noise element due the threshold and release settings programmed by the composer (see Fig. 5.12).

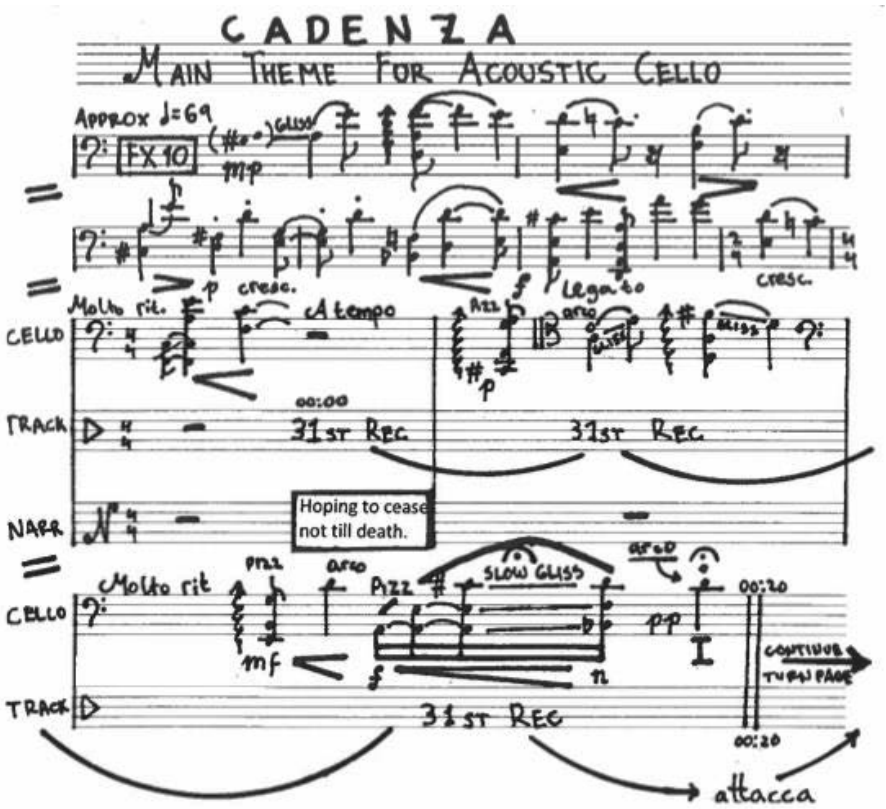
FX 9 (DISTORTION)

	TYPE	VOLUME	BASS	MIDDLE	TREBLE	PRESENCE	MASTER	BRIGHT	MIC. SET	MIC. LEVEL	DIR. LEVEL	THRESHOLD	RELEASE	RATE	DEPTH	MANUAL	RESONANCE	DELAY TIME	FEEDBACK	LEVEL
PRE AMP	SLDN	10 0	5 5	60	65	45	75													
SPEAKER SIM	MATCH								2 CM	1 0 0	0									
NOISE SUPPRESSOR	ON											40	30							
EFFECT	OFF																			
DELAY	OFF																			

Fig. 5.12. *Song of Myself* by Vassilev (2011: 32).

The last part of *movement III* is a solo cello cadenza, which constitutes the main theme of the piece. In this excerpt the cello is not amplified or processed; it should be acoustic and the performer is required to turn down the master volume of the rack. The theme consists of an eight-bar

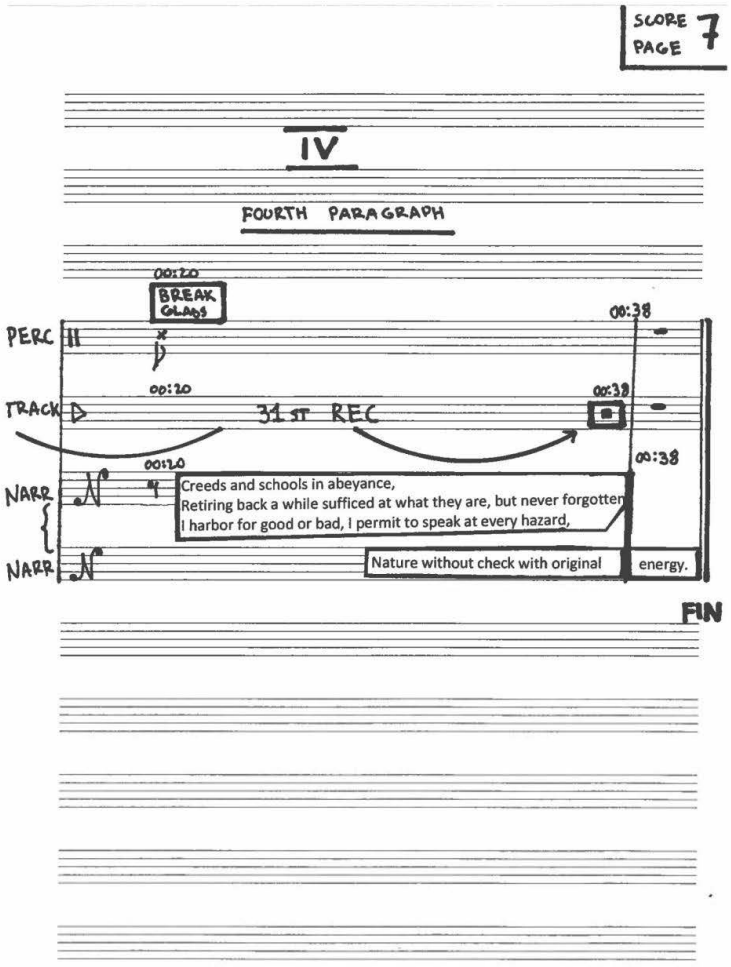
polyphonic passage and a sort of coda that connects to the next movement. The techniques used in the cadenza are *glissandi, pizzicati* on arpeggio, and rather traditional bow strokes. All these techniques and their articulations somehow create a clean sonority using the most natural sound of the instrument within the entire piece, giving it a peaceful atmosphere and a resolutive character. Two bars before the coda, the track and the narrator join the cadenza. The first introduces a distorted sound that repeats in loop until the end of the piece, while the narrator recites the last line of paragraph three (see Ex. 5.13. and Fig. 5.13.).



Ex. 5.13. *Song of Myself (Cadenza)* by Vassilev (2011: 6).

Fig. 5.13. *Song of Myself* by Vassilev (2011: 32).

Movement IV consists of the distorted loop track already introduced in the previous movement, the last paragraph of the poem recited by the narrator, and the percussionist breaking a glass. However, the superimposition of these three elements lead to a cut made by the track player, giving the last word to the narrator, who finishes the piece (see Ex. 5.14.).



Ex. 5.14. *Song of Myself (Fourth paragraph)* by Vassilev (2011: 7).

After the composition process and premiere of the piece, Vassilev (2011: 22) argues:

> With this diary of composition I documented my process as an artist who is searching for an outcome that has not been taught in school. I found my own sound through electronics, and this helped me see the cello through another perspective. Writing my own music with new sounds that come out of my instrument opened new doors

> for my artistic career. Now I know that I can combine my classical career with my composing. I have realized that I can continue writing for my instrument, using electronics and discovering new sounds that cannot by made acoustically. I can also play and perform my music in recitals that are combined with classical music.

In conclusion, *Song of Myself* shows a timbral re-signification through the use of electronic devices applied mainly to traditional playing techniques. Nevertheless, Vasiilev recurrently explores within these processes certain techniques such as *pizzicati* in arpeggio and *col legno*, which are strongly connected to the phenomenon of re-instrumentation, giving to the cello and hence to the piece a sonic identity inspired by plucked strings and percussion instruments. In addition, the idea of re-instrumentation in Vassilev's music in general somehow intends to resemble the sound of a processed electric guitar on the cello by using pedals and effects conceived for electric guitars. However, the refined settings and the precise parameters that the composer applies to an acoustic cello within his work has not only given his music a very personal input but also a unique *new cello sound* to the actual Colombian repertoire through different sonic experimentations.

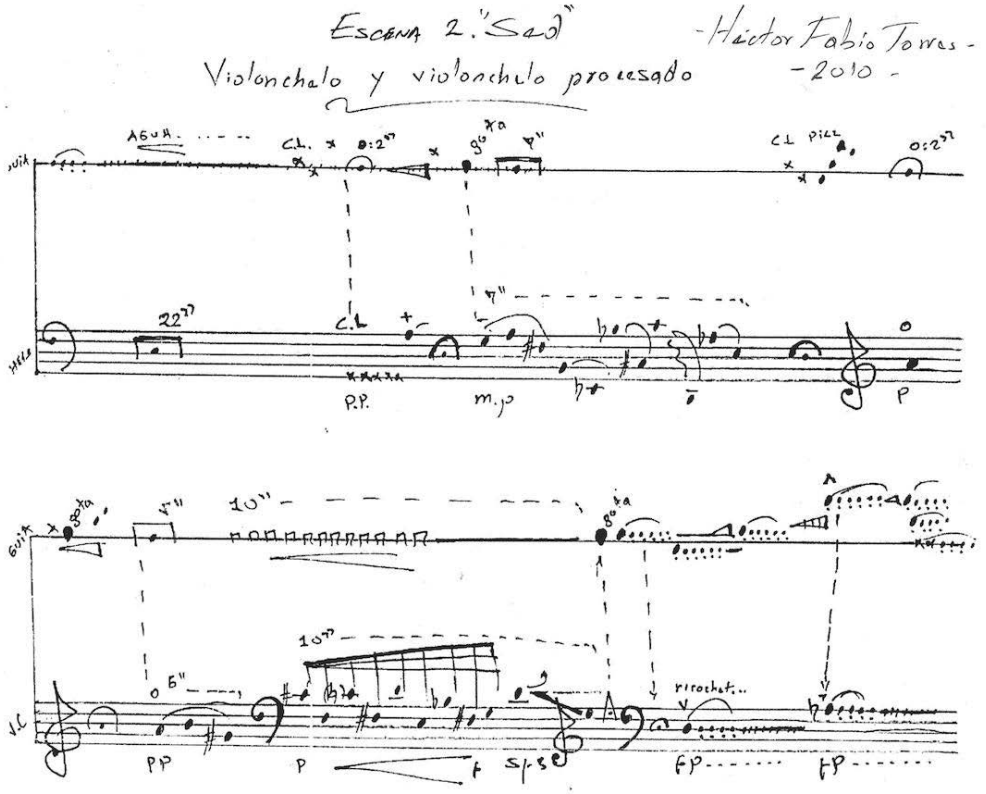
5.2.4. *Sed* by Hector Fabio Torres

This piece was composed in 2010 and is part of one of the most important pieces by the composer, *"María",* which was developed under the concept of *Ópera Expandida* (expanded opera) due its different approach to this musical form and the use of multimedia elements such as video processed in real time and electronics. For instance, in the opera the cello has a leading role and it represents not only a musical instrument but also an important character within the musical plot and dramaturgy. On the other hand, *Sed* can be performed as an individual piece (outside the opera) for cello and electronic media. The first version and premiere of the piece was performed by the Colombian cellist Camilo Benavides, who has been an important collaborator within Torres' projects.

Sed is approximately six minutes long. The time organisation is proportional, namely, it does not have a measure signature or time variations with a specific requirement. The electronic part is fixed on a prerecorded track based mainly on cello samples and *concréte* sounds, such as running water and drops. These materials are connected to or conceptually represent the name of the piece (Thirst).

The current score is hand written and includes a graphic representation of the electronic part that works as a study and performance guide for the cellist. The cello part requires several extended playing techniques combined with diverse bow strokes, which generate a wide range of timbres in the instrument. In addition, the composer has given the piece an open means of performing using some processes applied to the cello in live electronics (using a patch in Max/Msp) or merely amplifying the instrument without any other process (Torres 2017: IIIa).

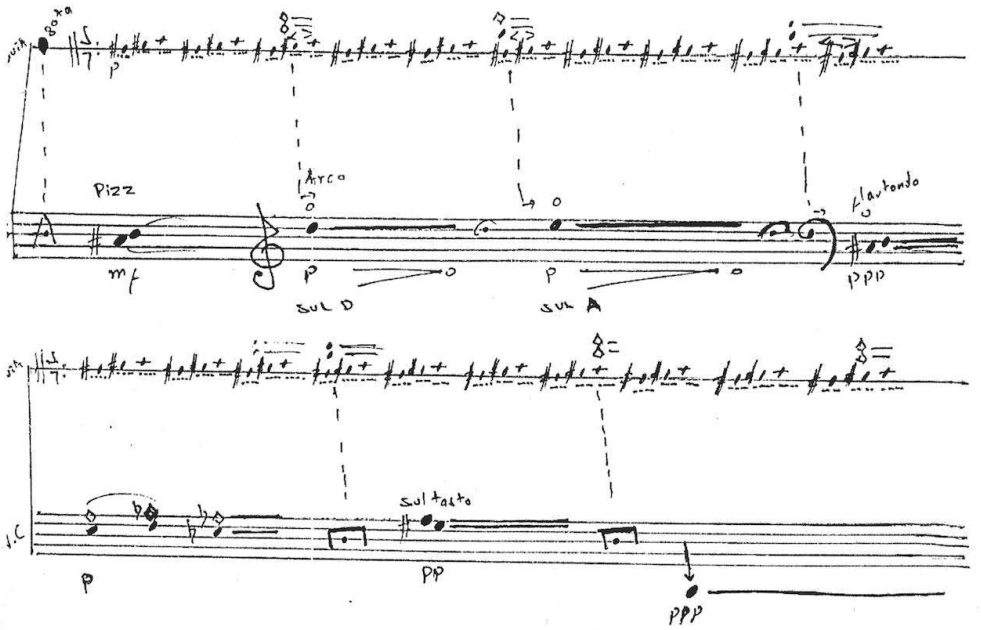
Sed opens with an introduction of the electronic part where running water sounds and some cello strikes interact together. Later, when the cello part is juxtaposed to the electronics, different techniques such as *pizzicato* and percussion gradually build the sonic discourse by a sort of conversation. The cello part presents a set of pitches organised in an aleatoric rhythm to be chosen by the performer. However, some phrases are more rhythmically detailed with clear figures. These first passages are developed within the whole register of the instrument and contrast between percussive bow techniques and regular up bow/down bow (see Ex. 5.15.).



Ex. 5.15. *Sed* by Torres (2010: 1).

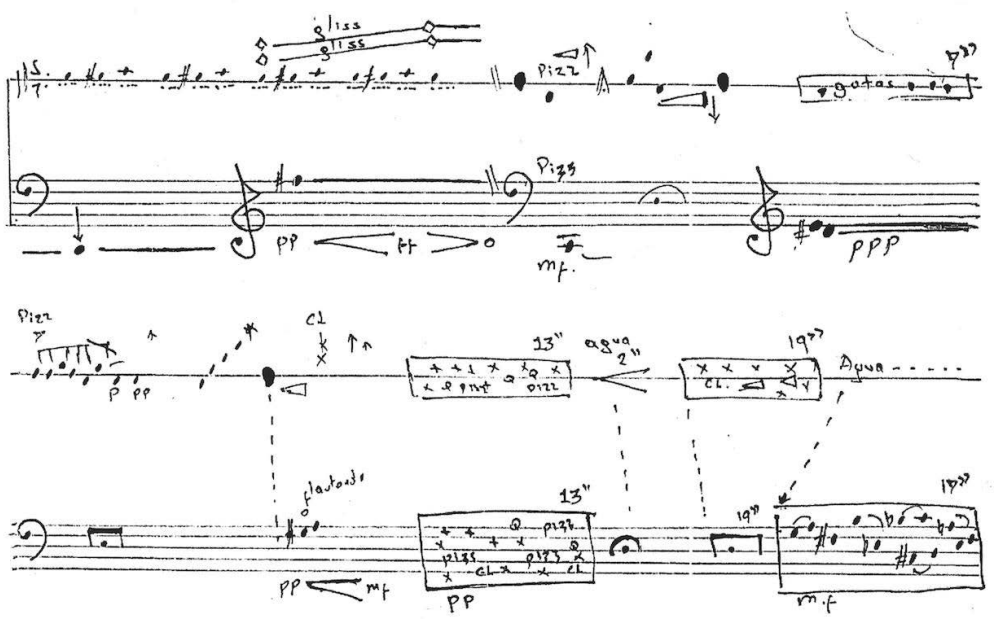
The second part of the piece presents a repetitive progression in the electronics and some long high-pitched gesture superimposed that appears and disappears within different lengths and intensities. On the other hand, the cello part presents long gestures executed with different techniques and articulations such as *flautando, pizzicato*, and natural and artificial harmonics. Together with shifts in bow position, these techniques and articulations clearly generate a timbral

polyphony and a complex polytimbral development, where almost every gesture has a unique sonic property completely different than the others. The composer also requires the performer at the end to play the lowest note possible, hence, a *scordatura* tuning must be achieved in real time (see Ex. 5.16.).



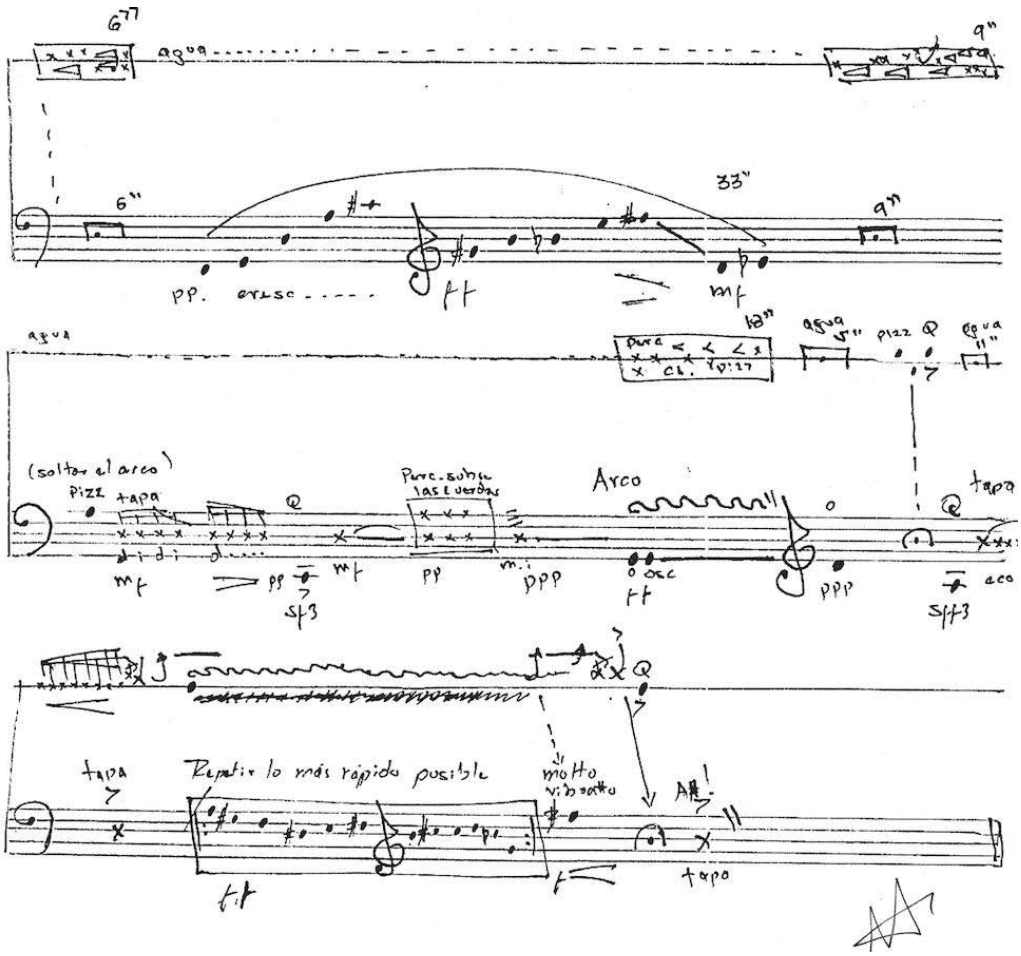
Ex. 5.16. *Sed* by Torres (2010: 1).

The third part of the piece begins with a percussive atmosphere where the cello is the main sound source. Namely, the electronics and cello parts are based on processed *pizzicato*—mainly Bártok—and strikes against the wood, strings, and fingerboard. After introducing the running water sound, which continues throughout this section, the cello part presents a re-exposition of the first gesture of the piece but this time on a ascending arpeggio that reaches the highest register of the instrument. The contrast between the percussive and the melodic parts not only emphasises the timbral polyphony mentioned previously but is also a clear example of re-instrumentation (see Ex. 5.17.).



Ex. 5.17. *Sed* by Torres (2010: 2).

Towards the end, the composer combines the two previous ideas that generates a final passage where the intensity increases dramatically to such an extent that the sound result is almost noise. In addition, at the end of the piece Torres suggests that the performer shouts a short sound (*AH!*) while executing the last strike against the wood of the cello. This gesture represents a sort of despair that is released or claimed; a search for satisfaction after the suffering of feeling thirsty. In other words, the theatrical and conceptual elements of his opera remain within the piece (see Ex. 5.18).



Ex. 5.18. *Sed* by Torres (2010: 2).

5.2.5. *Plegaria Muda: Preludio* by Camilo Méndez San Juan

The compositional process of this piece started in 2012 during the course New Music New Media in Aldeburgh (England). Although the piece was premiered the same year on 14 September in the Britten Pears recital hall by Zoë Martlew, the composer considers it as a work still in progress as some matters remain unresolved. For instance, the score is not yet finished but there are some drafts of that resulted after the work in collaboration with the cellist (Méndez San Juan 2017).

Plegaria Muda: Preludio combines the organic sound of the cello with an analogue device and a digital process. According to the composer:

> I wrote sketches. Zoë Martlew played them and I recorded them during our sessions. The final result consisted of splitting and pasting the fragments that I liked. The Max/Msp patch controls the accelerometer—that Zöe uses in the wrist of her right hand—which at the same controls the reverb. (Interview VIIIa: 2)

On the other hand, the piece has a strong extramusical idea of which the piece's title is derived. *Plegaria Muda* (Mute Prayer) is originally the name of an art installation by Colombian conceptual artist Doris Salcedo, who has influenced some of the musical works of Méndez San Juan.

For instance, the composer's catalogue includes a cycle of pieces using the name of Salcedo's work. In his doctoral thesis, Méndez San Juan (2015: 14) claims:

> The cycle will consist of five pieces organized according to the following structure: *Preludio* for solo violoncello, *Plegaria Muda I* for sextet, *Interludio* for two amplified percussionists, *Plegaria Muda II* for septet and *Postludio* for solo female voice. Only *Plegaria Muda II* and *Interludio* are completed.

Plegaria muda is an installation consisting of paired wooden tables, once upon the other, which are approximately the size of a human coffin. In between the tables is a layer of earth, where branches of grass seem to be growing through the upper table, which is set upside down. The concept of the installation is a reaction to the murder of thousands of Colombian citizens between 2003 and 2009 by the Colombian Army (Nasher Sculpture Center 2017). The composer therefore relates his musical ideas on the cycle to Salcedo's work in both her artistic philosophy and her political position. According to Méndez San Juan (Ibid: 13):

> The installation *Plegaria Muda*, with its scattered and/or unrestricted use of the space, gave me the idea of developing a compositional cycle in which the musical materials reappeared and reorganized themselves in many different ways throughout the different pieces. The cycle was my response to the tragic events that have occurred in Colombia and have marked my adult life.

Plegaria Muda: Preludio is approximately 8'40'' long[54]. In terms of structure, it is organised in three parts where the composer explores specific timbral treatments, time, rhythmic and pitch procedures, and different playing techniques. However, in general the latter ones are developed through the use of open strings, unisons, and bow overpressures to generate beatings and distorted sounds.

The first part is approximately 4'15'' in which a low pedal is introduced and developed throughout the whole section in gradual *crescendi* and *decrescendi* and in gradual timbral modulations produced by different bow pressures and bow position shifting. This pedal is juxtaposed to ascending and descending *glissandi* in a middle-high and high register. These two layers, bow articulations, and playing techniques generate a timbral polyphony based on natural

[54] Since a completed score is not yet available, the analysis method consisted of listening the recording of the premiere of the piece. This recording has not been published and it was provided to me by the composer exclusively for research purposes.

harmonics, artificial harmonics, and *flautando* sounds that interact with each other, also creating different time layers. For instance, an irregular metered and delayed gesture is superimposed to the pedal. Both gestures are emphasised with the reverb and the accelerometer, which also create a diverse spatialisation.

The second part is approximately 2'49'' long. Here the most striking feature is how during the whole section a low- and high-pass filter process produces a constant sweep of ascending and descending natural harmonics. However, from the beginning of the passage, short melodic phrases are clearly formed by the upper partials of pedal notes. These processes are achieved by the interaction between the accelerometer and the reverb parameters controlled by the bow movements of the cellist.

The last part of the piece is a sort of coda that lasts 1'36'' and is developed in a constant undulation of distorted sounds. The undulation yields a long rhythmic pattern and is created by the manipulation of the reverb, which also generates well-defined delay patterns throughout this whole section. On the other hand, the distorted sounds—low and high—are produced by bow overpressure. Within the whole passage, the noise range is so high that the pitches are practically unrecognisable. In other words, this section is rather a mass of contrasting pitched sound material that undulates and moves freely and in different time frames around a musical space formed by several layers.

5.2.6. *Ashtánga sádhana* by Matías Uribe

This piece is an intermediation for cello processed by electronics, choreography demonstrator, and video mapping on the body. It was premiered by the composer himself in Medellín (Colombia) in 2013 as part of the program of his bachelor's graduation concert at the EAFIT University. The most striking feature is its connection with the spiritual practice *Yoga.* The compositional process was inspired by the fundamental level of *Yoga* called *Ashtánga sádhana* (Uribe 2017: Xa: 1.). Hence, this work is the composer's personal musical representation of the practice itself. Another important feature is the composer's requirements for the performance regarding the structure order, which is organised in eight movements corresponding to the eight parts that form this specific practice (*mudrá*, *puya*, *mantra*, *pránáyáma*, *kriyá*, *ásana*, *yôganidrá*, *samyama*) and the skills that the performer should have. According to Uribe:

> The structure here presented corresponds to a type of orthodox practice, however, the structure can vary in case a heterodox practice or another type of orthodox practice is chosen. In any case it is essential that the performer has the necessary knowledge to choose the order of the movements of the piece (Xa: 3).

Due the complexity of the extramusical matters of this piece, the following analysis is based on musical and the main sonic characteristics. For example, each movement is based on gestures that give the structure to the piece and work as actions to be followed by the cellist, who is required to

make decisions constantly. In fact, the piece does not have a final version of the music score but there is an unedited document/guide[55] written by the composer, which condenses roughly and describes all the procedures of the piece with links to a video recording[56] of the piece performed by the composer himself. Furthermore, there are not specific requirements for the electronics devices used but rather general indications for the setup and the performance.[57] However, Uribe argues

> There is a music score, but as the piece has been only performed by me it is rather a sketch […] Perhaps when another cellist would be willing to perform it I could set the score better and even I would collaborate with the study process […] For the electronic processes I used Ableton live, a Memory Man analog delay and a Tech21 reverb. The interaction with the image is made by using Max/Msp for live and Resolume. (Xa: 2).

The first movement of *Ashtánga sádhana* is *mudrá* and includes two gestures to be developed within five minutes. Gesture I is a long pedal on the lowest open string (C) where the natural harmonics of its series appear one by one juxtaposed and create a polyphonic passage using a loop pedal. The performer is free to decide how many harmonics are juxtaposed. Gesture II filters and reduces the resulting mass sound of the latter gesture to a sort of pedal in the middle register. This gesture must be executed manually by the performer through an analog device.

Puya is the second moment and lasts approximately eight minutes. The movement includes four gestures. The first one (I) indicates one melody ad libitum superimposed to the pedal that continues from the last movement. The melody is looped and on top a new melody appears as a counterpoint that is also looped. Both melodies are processed with reverb and delay, turning them into a new mass of sound that gradually decreases in intensity. On the other hand, gesture II presents a melody in the middle register that must be looped and harmonised by superimposing parallel fifths, tenths, and aleatoric intervals that generate minor and major chords. Gesture III is a re-exposition of the first melody but this time in tempo. The melody is processed gradually with reverb and delay and is juxtaposed to the chords that continue looped from the previous gesture, generating a heavy mass of sound. The last gesture of this movement consists of the three first notes of the previous melody, where the last note remains static and is processed by a new loop, which generates a fast beat that decreases gradually in volume and yields the cue for the next movement.

Mantra lasts eight minutes and consists of two parts: Extroversion and Introversion. The first part is a melody based on the mantra *Jaya Guruji Ôm Dê*, which is repeated several times and increases gradually in volume leading to a sudden ending. The second part presents a succession

[55] Provided to me by the composer for research purposes.

[56] (https://www.youtube.com/watch?v=PjvybTfr4PU&t=7s)

[57] This analysis is based on the video recording and the document/guide mentioned above.

of superimposed harmonic sounds on the first string of the cello, reaching the highest register and leading to a short silence.

Over a 10-minute duration, *pránáyáma* represents different breathing processes, such as inhaling, exhaling, and retention through a sequence of melodies and pedals in natural harmonics, which are looped creating a complex texture consisting of several juxtaposed sound layers.

Kriyá is a four-minute rhythmic passage based on energetic chords and arpeggios in *pizzicato* processed with a delayed distortion effect that resembles the sound of an electric guitar. These gestures are looped and superimposed with a melody in natural harmonics that are repeated and also looped.

Ásana, yôganidrá, and *samyama* last approximately 25 minutes and consist of a prolongation of the sound material looped previously. Hence, the cellist stops playing and rather must create a sort of soundscape manipulating the electronic devices mentioned above. The soundscape must be reduced to a single sound that gradually fades out and works as a coda, which leads to the end of the piece.

Besides the timbral re-signification that Uribe gives to the cello through the use of electronic devices and extended techniques, *Ashtága sádhana* creates new challenges for the performer through the interaction with other performers and the manipulation of analog devices in real time. For instance, it requires the performer to practice *Yoga*, to learn how to use the analog devices, to get used to the length of the piece, and to understand that the other artistic mediums are not layers added to the music but rather a unit where different individuals collaborate. Hence, *Ashtánga sádhana* demands significant physical and technical preparation, which is strongly connected to the philosophy of this spiritual practice.

5.2.7. *Kärlek splittring II* by Marcos Suárez Cifuentes

The compositional process of this work for amplified cello and electronic device began in 2012 in Paris (France) as part of the doctoral research project of the composer. This project included a collaboration with the cellist Séverine Ballon, who performed at the pre-premiere (the piece is still in progress) at the *Festival Extension* on 14 May 2013 in Paris. The current version of *Kärlek splittring II* is approximately 13 minutes long; however, the expected final duration is approximately 20 minutes (Suárez Cifuentes 2017: IIIa: 1.). The sound treatment and the compositional process of this piece were developed under the same idea used in *Kärlek splittring* (see 4.2.3.), which is the first piece of a series of cello works. However, *Kärlek splittring II* uses a more complex setup regarding playing techniques and the inclusion of electronics. For instance, the performer is required to use two bows. One bow is for the right hand and the other is for the left, which already presents a tremendous technical challenge that requires the cellist to master this specific technique. According to Suárez Cifuentes:

> In *Kärlek splittring II,* I wanted to use an extreme two-bow technique, which Séverine had already used in other pieces by other composers, such as Liza Lim. However, what I wanted to do was to think of the instrumental technique as a choreographic one, hence, to link explicitly the bow position and bow movement work to a sonic and choreographic work. (IIIa: 2)

The most striking feature regarding the electronics is the specific treatment that Suárez Cifuentes employs for the spatialisation and diffusion of the sound. The cello must be amplified with four microphones to capture and diffuse the sound coming from four different parts of the instrument: the tail piece, the bridge, the frontal belly, and the upper part of the fingerboard. Such setting is strongly connected to the movement of the bow, which also triggers the spatialisation device. (Suárez Cifuentes 2017: IIIa: 2.) (see Fig. 5.14.).

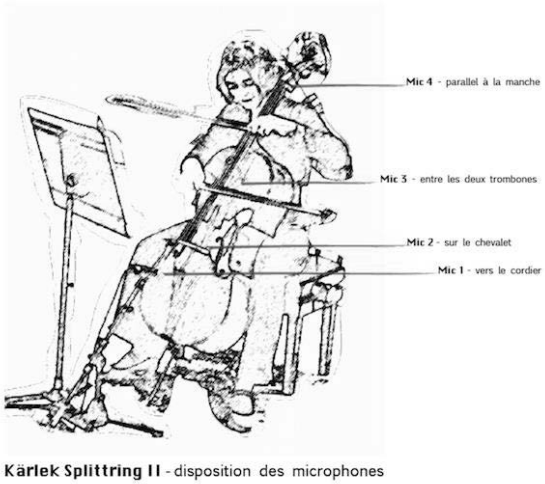


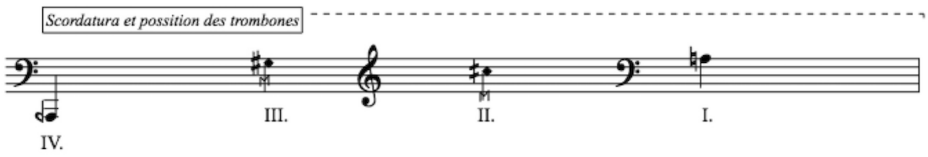
Fig. 5.14. *Kärlek splittring II* (amplification of the cello) by Suárez Cifuentes (2012–13: 1).

On the other hand, the piece requires a *scordatura* tuning that mixes natural and microtonal pitches and cello preparations using rather light paper clips or clay on two different positions on the second and third string to achieve multiphonic sounds from the open strings (see Ex. 5.19.).

Préparation du violoncelle

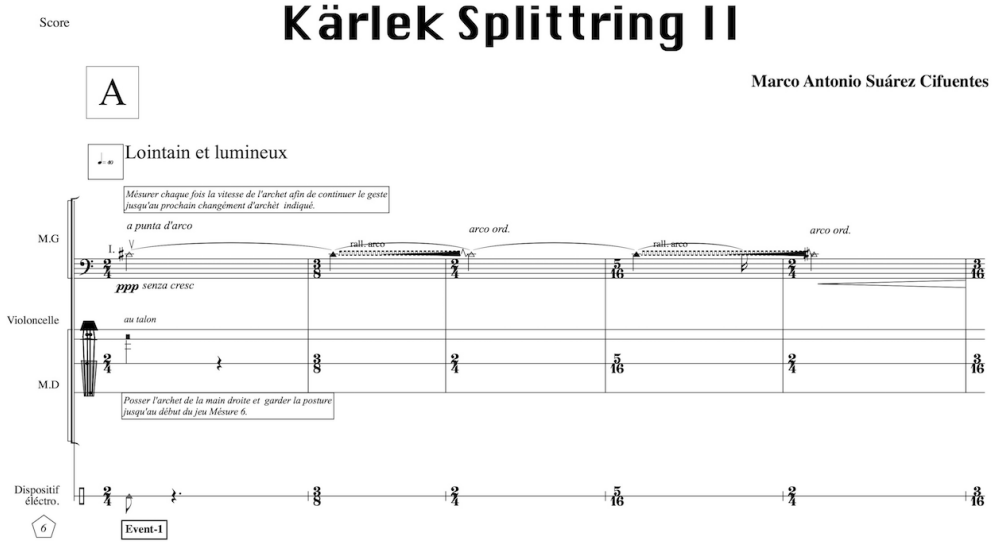
Les cordés II et III de l'instrument sont préparés sur des positions des multi phoniques avec des trombones métalliques légers ou de la pâte à modeler.

La corde IV joue est accordée en La – ¼ de ton



Ex. 5.19. *Kärlek splittring II* (apreparation/*scordatura* of the cello) by Suárez Cifuentes (2012–13:1).

Both the electronic setup and the playing techniques are connected to achieve the sound result and the sonic ideas that the composer wants to achieve (see 4.2.3.). Similar to the first piece of this series (*Kärlek splittring*), the musical score is extremely detailed to guide the performer to properly achieve every musical gesture and movement. For instance, the score consists of three staves. The upper indicates the events to be executed with the left hand, the middle refers to the right hand, and the lower represents the electronic devices (see Ex. 5.20.).



Ex. 5.20. *Kärlek splittring II* by Suárez Cifuentes (2012–13: 3).

Kärlek splittring II strongly highlights the noise element as a means of timbral re-signification of the instrument. Namely, all the techniques and the sound material used in the electronics turn this piece into a sort of noise study in the cello, not only for turning the instrument into a sort of noise generator but also due to the different noise ranges and their specific timbres and pitches. Namely, this piece uses both extended playing techniques and electronics to achieve a complete re-signification of the sound of the cello. In the composer own words: "timbral exploration is the essence of my work" (Suárez Cifuentes 2017: IIIa: 2).

6. CONCLUSIONS

This dissertation shows that timbre was one of the elements that bifurcated the solo cello repertoire from the 20th century onwards. This was due to the extension of playing techniques and the emergence of several musical trends. These two factors continue to expand symbiotically and have given birth to an extensive polytimbral solo cello repertoire. This idea of polytimbrality not only re-signifies the functionality of the medium but also the notion of timbre itself. Namely, the traditional preconceived sonic idea or sound reference to a cello has changed within several famous pieces from the repertoire of the 20th and 21st century. According to the many examples examined in this dissertation, this preconceived sonic idea even disappears completely or it is reconstructed. This shift in the paradigm of the cello sound also opens a different perspective in terms of research. For instance, investigations on timbre have been mainly linked to spectral morphology and have focused primarily on composition (poietic) and perception (aesthesic). Thus, a view that includes a synthesis of these two elements and expands them through the analysis of the musical score—where applicable—and a study of performance matters is needed to better understand the process of timbral re-signification itself, which is strongly connected to the way playing techniques are used. This thesis is thus relevant not only for the new cello repertoire but also to contemporary music in general, as aspects of timbral re-signification in acoustic instruments bring up by nature the necessity of a broader and pluralistic method of analysis. In fact, the inclusion of a performance view—always specific—and a combination with the other perspectives mentioned previously could create more analytical approaches. Furthermore, if such timbral phenomena has led to a significant change in the cello repertoire from the past century until presently, it is a fact that similar developments have occurred in other instruments. For instance, many of the composers that pushed forward timbral developments in the cello repertoire also worked with other instrumental ensembles under the same concept. These composers include are Xenakis, Lachenmann, Saariaho, Toledo, Triana, and Suárez Cifuentes.

The development of extended playing techniques in the cello in the 20th and 21st centuries has generated a new contemporary cello technique tradition that is characterised mainly by a re-signification of the timbre of the instrument. This tradition has not only been applied to the written repertoire but also to other musical practices and processes that occur in real time. This has led to another branch of the contemporary repertoire, namely the non-written one, created mainly within the improvisation and sound art spheres. On the other hand, the contributions of the current composer-performer continues to enlarge this tradition and to develop cello playing techniques and repertoire. This is due to the fact that increased knowledge of the instrument's techniques and the means of creating new music with these tools is enhanced simultaneously.

As mentioned above, the symbiotic relationship between the expansion of playing techniques and the emergence of new musical trends during the 20th century has resulted in a reassessment of the functionality and timbre of the cello. This has consequently generated an *alternative sounding* repertoire. Nevertheless, some trends have contributed more than others to these changes from

various approaches. For instance, the emergence of *musique concrète* and electronic music encouraged composers and performers to manipulate the acoustic properties of the medium, blending and processing it with electronic devices. Indeterminacy and experimentalism, for instance, led to the exploration of chance parameters within the sound palette of the cello. Moreover, the view of the cello not only as a musical instrument but also as a sonic body with a wide spectrum of different sounds can be attributed to the influence of visual arts, performing arts, and noise. Improvised experimental music generated radical timbral innovations in the medium, as composers and performers mainly worked with experimental procedures applied to extended playing techniques, electronic devices, noise, and sound objects, among others. Unlike experimental composers, performers and improvisers, jazz, rock, and pop cellists do not appear to be focused on fully deconstructing the sound of the instrument to the extent of making its sound unrecognizable. In contrast, their way of re-signification results from searching for a point of convergence between the traditional and processed—through amplification or electronic devices—sound of the instrument.

The repertoire for solo cello and cello with electronics and the development of extended techniques began to spread throughout the world by the second half of the 20th century. Accordingly, Latin American composers and performers began to play an important role within these processes. In fact, two of the most important early pieces for cello and electronics were composed by the Argentinians Mario Davidovsky and Hilda Dianda, who are ranked as pioneer composers within the electroacoustic cello repertoire. By the 21st century, the repertoire for solo cello and cello with electronic media in Latin America has become well established and continues to show interest in new timbral explorations through the use of extended playing techniques. On the other hand, according to the actual repertoire from Colombian composers, which is the central topic of this dissertation, timbre and extended techniques are convergent features that outline a sort of new collective identity among creators and creations. Namely, in the analyses shown in chapters 4 and 5, common characteristics regarding the use of timbre and extended techniques become apparent, displaying the existence of a sort of unconscious dialogue among these pieces. This was led mainly by a constant search for the timbral phenomena discussed in chapter one.

All these previous ideas show how globalisation has allowed the establishment of a common ground in terms of musical development among different territories throughout the world. Namely, art music is no longer restricted to Europe and Latin America is not longer a region where only popular music is recognised. In fact, the solo cello and cello with electronic media repertoire of the 21st century by Colombian composers is a clear example of progress, where the discussion between what is or is not art music and popular music is no longer an issue. This repertoire has been created by embracing different realities and identities, for instance, combining elements of the indigenous and African ancestors with technology. In other cases, this has occurred by completely rejecting the collective ideas and ethnic concepts about what being Colombian means. As a matter of fact, within this repertoire questions on how chronological and geographical features are hierarchical when defining identity are clearly revealed, and how this is at this point the history

of an old-fashioned mentality. This Colombian repertoire shows parity with the musical development of other Latin American countries and other territories in world and a multicultural richness that results from the diversity applied to these creations.

However, there is a problem that comes from the educational models in the Colombian academic music system. Specifically, most of the cellists do not know this repertoire and do not seem to be interested in studying or even promoting it. The Colombian cello scene encompasses diverse schools and several professional cellists and teachers at all levels. Among all these performers and educators, only a few of them are actively working in groups or institutions that disseminate new Colombian music. What is controversial is that nowadays there are Colombian top cellists playing in different well-known orchestras and competing in famous competitions all around the world. These performers could spread and perform the actual works of Colombian composers. Unfortunately, this does not seem to be the case.

Although it is clear that this broad and eclectic Colombian repertoire—similar to most of the repertoire composed from the 1950s onward—requires a high technical proficiency required for performing extended techniques, using electronic devices, and engaging in multidisciplinary collaborations, these are subjects that are definitely not taught in the Colombian cello schools and there does not seem to be any remarkable outsider's motivation for it either. This should change since it is crucial to expand the repertoire within the cello curricula in Colombia, which will contribute to cellists becoming familiar with and accepting contemporary cello technique instead of rejecting it without knowledge of it. The actual cello curricula in Colombia is completely out of date and does not even include for the most advance students already classic pieces composed in the 20th century by recognised composers such as Dallapiccola, Ligeti, Scelsi, Cage, Xenakis, and Lachenmann to name but a few. These composers worked together with performers and developed aspects of timbral polyphony, timbral re-signification, and pushed playing techniques to an extreme and new virtuoso level. Perhaps the inclusion of these pieces within the curricula and inviting cellists that perform new music to teach within Colombian music institutions could be a starting point for a change. Musicians and artists in general have ethical commitments within society, one of which is to create and promote new pieces of art and not only to repeat old repertoire and to entertain audiences. It is a professional and ethical obligation for instrumentalists to promote and disseminate in one way or another the current repertoire, especially local and new repertoire. If this does not happen there is a risk of hiding or even stopping an emergent musical tradition.

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